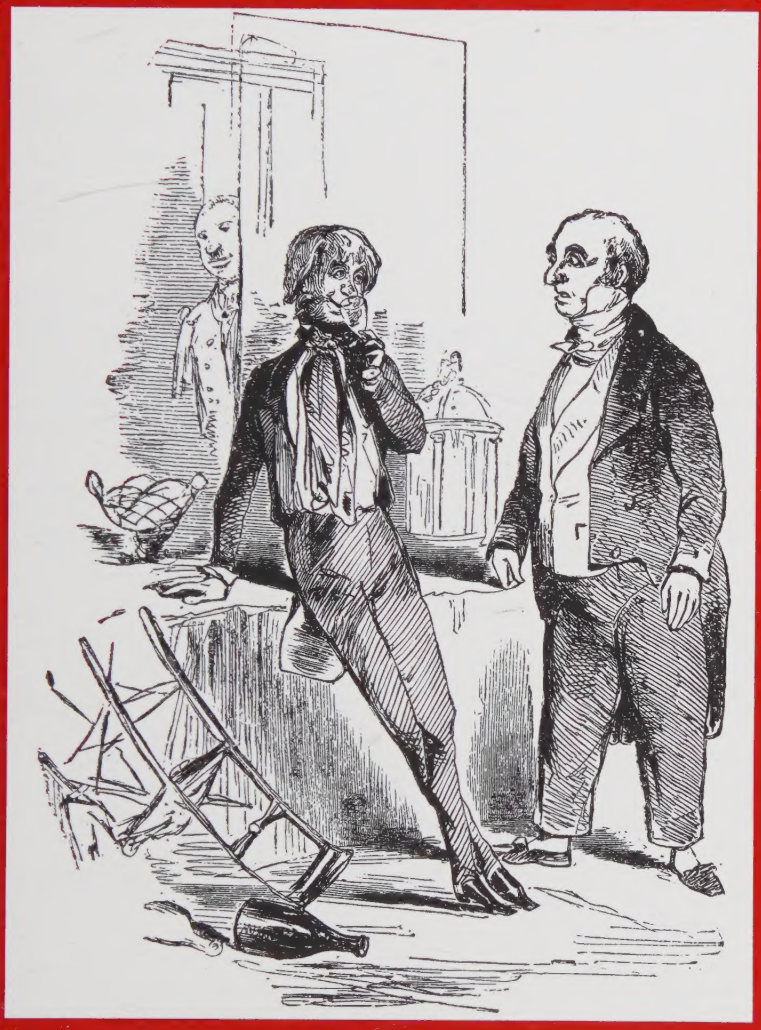

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Skills for HIV Risk Reduction: Evaluation of Recall and Performance in Injecting Drug Users

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ABSTRACT

Evaluation of recall and performance skills required to clean needles/syringes was conducted in Dade County with 393 injecting drugs users (IDUs) in 1988–1989. The study was guided by a question of the extent of correct cleaning of needles/syringes. A free recall procedure which combined cognitive and psychomotor testing provided a means of verifying knowledge and skills. The results show that injecting drug users were able to learn and retain knowledge and skills necessary to prevent risk of HIV infection by use of needles/syringes. Tests of knowledge and performance 6 months after training showed high retention of the material learned. The population at risk is capable of reducing the spread of HIV. The impact would be greater with perfect performance, but even with partial performance, some preventative impact could be assumed provided exposure time to bleach exceeds 30 seconds.

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Key words. Skills; HIV; Injecting drug users; Needles/syringes—cleaning; Bleach disinfection; Risk reduction

INTRODUCTION

Injecting drug use is the second leading risk category for acquired immunodeficiency syndrome (AIDS) in the United States (Centers for Disease Control and Prevention, 1994a). Human immunodeficiency virus (HIV) is transmitted when injection equipment is shared by injecting drug users. The National Institute on Drug Abuse (NIDA), the Center for Substance Abuse Treatment (CSAT), and the Centers for Disease Control and Prevention (CDC) recommend that IDUs can reduce their risk of acquiring HIV infection by abstaining from injection drug use and by not sharing injection equipment with anyone. If sharing continues, it is recommended that cleaning injection equipment with bleach should reduce transmission of HIV (Millstein, 1993). Recent epidemiologic research on HIV seroconversion and the use of bleach cleansing to reduce or eliminate the risk of HIV transmission has raised some doubts about the efficacy of bleach (Titus et al., 1994; Vlahov et al., 1994). However, recent laboratory studies have suggested that a 30-second exposure of bleach to contaminated equipment is effective in inactivating HIV (Shapshak et al., 1994). The current CDC/CSAT/NIDA provisional guidelines for HIV disinfection recommend that bleach (full strength) be in contact with injection equipment for at least 30 seconds (CDC/CSA/NIDA, 1993; Millstein, 1993).

Compliance by IDUs with bleach disinfection protocols has been limited (CDC, 1994b; McCoy et al., 1994; Siegal et al., 1994). Although they may seem rudimentary to the casual observer, the skills needed to avoid HIV infection through cleaning of needles/syringes with bleach must be exercised correctly. Rinsing needle and syringe with bleach for injection drug use has several components (described in Table 2). While many IDUs report cleaning needles/syringes (Stephens et al., 1993), we wondered if they could demonstrate performance of the behaviors in ways thought to be effective in preventing exposure to HIV.

We conceived of the skills evaluation presented here because we were not convinced that the most widely used methods to communicate the use of bleach for cleaning needles/syringes were the most effective techniques to use with a drug-using population. In most cases people who received instruction on rinsing injection equipment with bleach watched a film/videotape or a live demonstration (Booth and Watters, 1994; Choi and Coates, 1994; Friedman et al., 1986; McCoy et al., 1990) and were expected to internalize instruction and model the behavior based on what they saw and heard. Videotapes have been used to demonstrate sexually transmitted disease control measures such as condom

use (O'Donnell et al., 1995; Solomon and DeJong, 1988). Many of the participants in our outreach studies had reported cleaning needles infrequently and we wondered whether they had cleaned them correctly. The need to know more about actual practices in the field directed our efforts to examine the skills in a laboratory setting.

We based our decision to test HIV prevention skills on the idea that a free recall procedure which combined cognitive and psychomotor testing would provide the most complete test of retention of new skills. Free recall requires unprompted recollection of information previously learned. It is important to evaluate interventions in terms of learned skills in addition to self-reported criteria.

Psychomotor skills involve following a particular procedure or sequence of steps, performing the procedure to a certain level of competency, and creating an end product. In our study these skills require that the needle/syringe is rinsed appropriately with bleach in order to inactivate the HIV virus. While the end product (correctly cleaned needles/syringes) is a primary outcome of behaviors that prevent the spread of HIV, it is more difficult to evaluate. The skill to perform this activity may be more easily evaluated.

There has been little research to evaluate the skills of drug users to prevent HIV infection. Evaluations of psychomotor skills typically have been conducted of health education skills (Botvin, 1985) and soldiers skills (Schendel and Hagman, 1982). Recently, studies have evaluated condom skills of clients attending sexually transmitted disease clinics (Langer et al., 1994) and of drug users (Malow et al., 1994; Sorensen et al., 1994). Studies have also been conducted which assess relapse prevention skills of drug users (Brownell et al., 1986; Marlatt and Gordon, 1985) and HIV risk reduction training (Hawkins et al., 1991; Schilling et al., 1991).

Efforts to evaluate HIV risk reduction training among IDUs have largely depended on self-reports of risk behavior pre- and postintervention (Brown and Beschner, 1991; Leviton and Schuh, 1991). Utilization of needle exchanges sometimes has been measured by numbers of needles distributed and turned in (Des Jarlais et al., 1992; Stimson, 1989), and in others (Wolk et al., 1988) seroassays of returned needles have documented the success of needle exchanges. As yet, the literature on prevention of HIV infection has offered little evaluation of the skills necessary to clean syringes with bleach.

Some risk reduction theorists suggest that the decision to change behaviors requires several steps. The AIDS Risk Reduction Model (Catania et al., 1990) suggests that people become aware of risk, commit to changes, and begin to act. The theory of reasoned action (Ajzen and Fishbein, 1980) suggests five stages: 1) precontemplations, (2) contemplation, (3) preparation, (4) action, and (5) maintenance. Individuals may not progress steadily through all

the stages, but regress. With each attempt, individuals usually start at a higher stage than the one from which they started.

While several HIV risk reduction interventions among drug users had subjects participating in syringe cleaning skills demonstrations, they did not report any skills evaluations (Malow et al., 1994; National AIDS Demonstration Research Project, 1994; Rhodes et al., 1992; Schilling et al., 1995). Recently, two studies among IDUs (McCusker et al., 1992; Sorensen et al., 1994) evaluated whether HIV risk reduction interventions improved syringe cleaning skills. Participants in these studies were given injection equipment, bleach, and water, and asked to demonstrate the cleaning procedure. The participants were evaluated on their ability to enact the multiple steps involved in cleaning injection equipment with bleach and water pre-and postintervention. These studies had a different focus from our study. While they were interested in skills from the context of a theory-based intervention, we were interested in the association between the free recall method (requiring that no cues/objects be placed in front of the participant until they were named) and the ability to perform the task. Our study examines the relationship between knowledge of how to clean a syringe with bleach and the demonstration of the syringe cleaning skills.

SUBJECTS AND METHODS

A sample of 393 out-of-treatment IDUs participated in the skills evaluation study conducted in Dade County, Florida in 1988–1989. The demographic characteristics of the sample are shown in Table 1. The sample consisted primarily of Black males who were 25 to 44 years old. Fewer than half had graduated from high school, yet 21.4% had some college education. Less than one-third (29.8%) lived in his/her own place. Almost all (89.1%) participants had been in jail, but fewer than one-fourth had any type of drug treatment experience. The mean age of first use of drugs was 18.7 years, and current use showed large proportions of users of crack cocaine, cocaine powder (and by injection), and heroin.

The subjects were previously exposed to needle/syringe cleaning knowledge in an HIV risk reduction intervention program (Chitwood et al., 1991; McCoy et al., 1990). The IDUs were taught a standard bleach cleaning procedure used throughout NIDA programs. Demonstrations of needle/syringe cleaning skills by counselors and participants followed the free recall cleaning procedure. The cleaning procedure consisted of completely filling the syringe twice with bleach, discarding the bleach from the syringe into a waste container (not into the bleach bottle), and completely rinsing the syringe twice with water.

Table 1.

Characteristics of Skills Evaluation Study Sample (N = 393)[a]

Demographic characteristics	%
Sex:	
Male	72.8
Female	27.2
Age:	
18–24	5.6
25–34	41.5
35–44	43.3
45+	9.7
Race/ethnicity:	
Black	76.8
Hispanic	5.3
White	17.0
Other	0.8
Highest grade of education:	
None through 11	47.5
High school graduate	31.1
Some college	18.1
College graduate	3.3
Living situation:	
Own place	29.8
Lives with someone else	48.6
Boarding house	5.3
Shelter	3.3
On street	7.9
Other	5.1
HIV serostatus:	
Negative	63.4
Positive	36.4
Indeterminate	0.3
Prison experience:	
No	10.9
Yes	89.1
Drug user treatment experience (number of times)	**%**
Drug detoxification (mean = 3.01):	
None	78.3
One	9.4
Two	4.3
Three or more	8.0

(*continued*)

Table 1. *Continued*

Drug user treatment experience (number of times)	%
Residential (mean = 2.2):	
None	76.5
One	12.8
Two	3.8
Three or more	6.9
Methadone maintenance (mean = 1.9):	
None	75.5
One	14.3
Two	3.3
Three or more	6.9
Age at first use of drugs (mean = 18.7):	
Under 14	16.5
15–18	51.2
20–24	19.1
25 and over	13.2
Current drug use	**%**
Marijuana:	
None	24.2
Less than daily	49.1
Daily or more	26.7
Crack cocaine:	
None	22.9
Less than daily	42.8
Daily or more	34.3
Cocaine:	
None	42.7
Less than daily	39.9
Daily or more	17.4
Cocaine (injected):	
None	14.2
Less than daily	53.2
Daily or more	2.63
Heroine (injected):	
None	34.9
Less than daily	39.9
Daily or more	25.3

[a]Because of rounding off, not all categories total 100%.

The skills evaluation was conducted at various time intervals as these subjects came into an assessment center for a 6-month evaluation for another study (Chitwood et al., 1991). When they returned for the second session of the enhanced program, all were invited and all agreed to participate in the skills

evaluation by the intervention counselor who briefly described the 10-minute procedure.

A free recall procedure was selected as the best way to investigate levels of prevention skills among study participants. The advantage of this method is that by placing no objects in front of the participant until they were named, the subject received no cues to the materials needed for the procedure. The disadvantage, of course, is that the absence of objects placed in front of the subjects, i.e., the absence of cues, may have prevented recall about the materials needed. Therefore, the free recall method is a more conservative test of the materials and skills needed to perform the procedure and affords a stronger measure of performance (Ashcraft, 1989; Tulving and Pearlstone, 1966). Precedents for using free recall tests for knowledge and skills have appeared in some of the psychological testing literature (Ashcraft, 1989; Tulving and Pearlstone, 1966), but to our knowledge, this has been their first application to the purpose of evaluating HIV prevention.

In free recall, the examiner asks the participant first to describe verbally the desired behavior as fully as possible, naming materials that must be present in order to demonstrate the behavior. The participant receives no prompting in this part of the free recall. Next, the examiner provides the participant with the identified materials and asks him/her to demonstrate their use. For the needle/syringe cleaning demonstration, the examiner provided only the items mentioned in the recall portion. Then the participant performed the needle/syringe cleaning skills.

A trained observer assessed both the knowledge and performance of the skill as the respondent demonstrated cleaning needles/syringes, using a checklist enumerating the steps required to perform each skill and recording each step as the respondent described and performed it (see Table 2 for checklist). When the examiner described an incorrect step in the procedure, the examiner showed the respondent the correct method and asked him/her to repeat it.

The recall/performance checklist was pretested and revised appropriately. Role play respondents assisted in assessing interrater reliability. Two extramural examiners and four staff examiners who would conduct the tests took part in the evaluation. The consistency of rating of different raters for the same questions revealed 100% agreement of six raters on seven *needle/syringe cleaning recall* items and 84% agreement on two items: 1) "recalled that waste bleach from syringe should be appropriately discarded into waste bottle (not bleach bottle) or waste basket," and 2) "recalled that waste rinse water from syringe should be appropriately discarded into waste bottle (not water bottle) or waste basket." There was 100% agreement on all *needle/syringe cleaning performance* items. The raters were instructed and agreed on consistency of observing and coding the items on which there was disagreement prior to implementation of the instrument.

Table 2.

Recall and Performance Checklist for Skills Evaluation

Item	Needle/syringe cleansing knowledge	Item	Needle/syringe cleansing knowledge
	Recalled that		Performance:
1	. . . syringe should be filled completely with bleach	1	Filled syringe completely with bleach
2	. . . syringe should be partially filled with bleach	2	Filled syringe partially with bleach
3	. . . waste bleach from syringe should be appropriately discarded into waste container (not into bleach bottle)	3	Discarded waste bleach appropriately
4	. . . syringe should be rinsed completely with water	4	Rinsed syringe completely with water
5	. . . syringe should be rinsed partially with water	5	Rinsed syringe partially with water
6	. . . waste rinse water from syringe should be appropriate discarded (not into clean rinse water bottle)	6	Discarded waste rinse water appropriately

In the analysis, items were recoded to measure competency of needle/syringe cleaning as completely recalled and performed, partially recalled/performed once and twice or more times or not recalled/performed at all. The rater checked a completely filled syringe when the participant pulled the plunger as far back as possible while the needle aspirated a full barrel of bleach. A partially filled syringe was anything less (see Table 2). Complete needle/syringe cleaning recall and performance included Item 1 when mentioned one or more times. No times included all other incorrect responses. Using bleach partially may be a safer needle/syringe cleaning practice than using no bleach at all, provided the bleach is in contact with the equipment for at least 30 seconds.

RESULTS

The type of knowledge IDUs had about the use of bleach to clean syringes and their performance of skills in the use of bleach are reported in the data of Table 3. Nearly all of the 393 IDUs (93.9%) said bleach should be used to clean injection equipment, but they reported various methods for the use of bleach. A plurality (41.5%) accurately recalled the exact protocol which they had been taught and told the evaluator that a syringe should be *completely* filled twice with bleach. An additional 36.4% said the syringe should be *partially* filled twice with bleach. The remainder stated that the syringe should be par-

Table 3.

Knowledge Recall and Performance of Cleaning Injection Equipment with Bleach (N = 393)

	Recall (# subjects), %	Performance (# subjects), %
No bleach	(24) 6.1	(25) 6.4
Partially rinse syringe one time with bleach	(45) 11.5	(44) 11.2
Partially rinse syringe twice with bleach	(143) 36.4	(143) 36.4
Completely rinse syringe one time with bleach	(18) 4.6	(30) 7.6
Completely rinse syringe twice with bleach	(163) 41.5	(151) 38.4

tially filled once (11.5%) or completely filled once (4.6%) with bleach. The recall memory problem related to knowledge was more likely to be the erroneous recollection that one should fill the syringe partially with bleach than to be the mistake of recalling that one needed to fill the syringe with bleach only one time.

All but one of the IDU participants who had reported that bleach should be used to clean syringes demonstrated how a syringe should be cleaned. Three out of four participants twice drew bleach into their syringes: 38.4% demonstrated the protocol perfectly and completely filled their syringes two times, and another 36.4% partially filled their syringes with bleach two times. Considerably fewer either partially filled (11.2%) or completely filled (7.6%) their syringes one time only.

The recall of how to clean needles/syringes is important primarily because of our interest in its association with the skill to perform the task. There was a significant, strong association (tau $b = .63$) between knowledge of how to clean a syringe and the actual demonstration of the cleaning technique (Table 4).

The majority of individuals who reported that cleaning should be conducted in a specific way also demonstrated that same skill. For example, 71.2% of the study participants who stated that a syringe should be filled completely with bleach two times demonstrated that same skill. Similarly, 57.8% who reported that the proper way to clean a syringe was to partially fill it once with bleach also repeated that behavior during their demonstration of cleaning technique. An examination of those cases that correctly reported how a syringe should be cleaned but demonstrated a different way to clean a syringe indicates that most "performance errors" were filling the syringe partially rather than completely with bleach. Very few IDUs who said bleach should be drawn into the syringe two times failed to do so in actual practice.

DISCUSSION

The major finding from this investigation is that IDUs were able to learn and retain knowledge and skills necessary to prevent risk of HIV infection by use of needles/syringes. Tests of knowledge and performance 6 months after training showed high retention of the material learned. There was a significant relationship between knowledge of how to clean a syringe with bleach and the actual demonstration of the cleaning technique. This demonstration of knowledge 6 months after instruction indicates that the population at risk is eminently capable of reducing the spread of HIV. The impact would be greater with perfect performance, but even with partial performance, some preventative

Table 4.

Association of Knowledge Recall and Skill Performance in Cleansing Injection Equipment with Bleach (N = 393)[a]

	Performance (Number of participants) Row percent				
Recall	No bleach use	Partially rinse syringe one time with bleach	Partially rinse syringe twice with bleach	Completely rinse syringe one time with bleach	Completely rinse syringe twice with bleach
No bleach use	(24) 100.0	N.A.	N.A.	N.A.	N.A.
Partially rinse syringe one time with bleach	(1) 2.2	(26) 57.8	(11) 24.4	(3) 2.1	(30) 21.0
Partially rinse syringe twice with bleach	N.A.	(13) 9.1	(97) 67.8	(3) 2.1	(30) 21.0
Completely rinse syringe one time with bleach	N.A.	N.A.	(1) 5.6	(14) 77.8	(3) 16.7
Completely rinse syringe twice with bleach	N.A.	(5) 3.1	(34) 20.9	(8) 4.9	(116) 71.2

[a] $\chi^2 = (16, N = 393) = 727.25, p \leq .0001$. Tau $b = .631$. N.A. = not applicable.

impact could be assumed provided exposure time to bleach is 30 seconds or greater.

Tests of rinsing needles/syringes èlicited a wide variety of responses because rinsing is a complex task, requiring many steps and much equipment. The free recall method of testing demands a high degree of retention on the part of the respondent because it offers no prompts or cues. Once the respondent had described the preventative behavior, he or she received only the equipment mentioned in the verbal response. Only 38.4% performed the rinsing skill perfectly, but an additional 55.2% performed it at least partially.

Although the study design of our skills evaluation differed from McCusker et al. (1992) and Sorensen et al. (1994), some comparisons can be made. Our study was done in out-of-treatment IDUs. McCusker's study was done while subjects were in an inpatient drug detoxification program. Sorensen studied outpatients in a methadone maintenance program or detoxification program. While all studies evaluated syringe cleaning skills as a multiple step process, McCusker and Sorensen used the total number of correct steps performed as a score of their final results.

Since the correct use of bleach is the most critical part of the needle/syringe cleaning protocol for HIV disinfection, we decided to specifically examine the knowledge and skills of cleaning syringes with bleach (completely filling the syringe twice with bleach). Sorensen notes that the step involving filling the syringe completely with bleach twice was consistently the most difficult. Prior to Sorensen's intervention study only 54% of participants correctly performed this step. At follow-up 3 months after the experimental intervention, which included skills training, 70% of participants in the methadone maintenance group and 80% of the participants in the detoxification study group correctly performed this step. Sorensen states that after 3 months the percent correct for most steps remained high for both experimental study groups. These results are consistent with our findings that IDUs can learn and retain the needle/syringe cleaning skills necessary to reduce risk of HIV infection. The percentage of participants who completely filled the syringe twice with bleach at follow-up was greater in Sorensen's study. One explanation for this difference may be that our study did not provide for continuing contact with program counselors or educational programs. Sorensen's study participants were initially enrolled in treatment programs and may have had continuing contact with counselors and received risk-reduction reinforcement during the 3-month follow-up period which resulted in greater compliance. The motivation to comply may vary depending on whether the participant is in or out of treatment for his/her addiction. In addition, our follow-up of 6 months was twice as long as Sorensen's, which may account for some retention loss.

While our study used the free recall method when testing skills, the other studies gave the materials needed to the participants prior to the skills demonstration. Our testing procedure was more difficult, since it required participants to recall the specific items needed for syringe cleaning and only those items recalled were given to them for the skills demonstration.

Syringe cleaning is a complex task. McCusker et al. (1992) and Sorensen et al. (1994) found that the total skills score increased immediately after an HIV risk reduction intervention which included skills training. Sorensen reported that 3 months after this intervention the detoxification study group had maintained this increase while participants in the methadone maintenance group had declined to preintervention levels. However, the intervention did not significantly improve syringe cleaning skills when preintervention and follow-up scores were compared. McCusker did not report any long-term follow-up results. Further study is needed for the development and evaluation of effective needle/syringe cleaning skills training programs for IDUs.

One limitation of our study is the absence of baseline testing of syringe cleaning skills 6 months prior to the skills evaluation. However, few studies had evaluated knowledge and retention of syringe cleaning skills in IDUs, and we felt it was important to document the results of this skills evaluation. Our data suggest that skills training should be included when designing future HIV risk reduction programs for IDUs.

We did not report on the knowledge and retention of skills related to rinsing syringes with water. Although rinsing syringes with water to remove blood, debris, and bleach is an important step, we felt that the most critical part of the cleaning protocol was the correct use of bleach. In order to comply with current needle/syringe cleaning guidelines for HIV disinfection, future skills evaluations will need to include an additional step which measures whether bleach is kept in contact with the needle/syringe for a minimum of 30 seconds.

The participants in this study did not constitute a representative sample of IDUs, and the level of success reported here reflects testing in a laboratory setting. In real life situations, factors involving negotiation, social skills, and lack of necessary materials have a strong influence on whether or not people engage in behavior that places them at risk of infection. They still have to decide that they want to avoid infection, and that their personal futures take precedence over immediate gratification or meeting of basic needs. Nevertheless, the skills and knowledge demonstrated by most participants in this study show that those so inclined have the capability to prevent exposure to HIV.

The HIV epidemic must be fought with behavioral preventative strategies for the foreseeable future. Appropriate and efficacious strategies must include compliance of high risk populations to tested technologies and strategies before the epidemic can be effectively confronted. It is critical for the entire public

health field to understand and disseminate the most effective means of teaching and promoting high retention of safer practices among all persons engaging in high risk behaviors.

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RESUMEN

Entre 1988 y 1989 se evaluó en el Condado Dade el aprendizaje del procedimiento de esterilización de agijas y jeringuillas, realizado con 393 consumidores de drogas endovenosas. El estudio se guió con la cuestión del grado de limpieza correcta de agujas y jeringuillas. Un procedimiento que combinó pruebas cognitivas y psicomotores posibilitó la verificación de conocimientos y habilidades. Los resultados muestran que consumidores de drogas endovenosas pudieron aprender y recordar el conocimiento y las habilidades necesarias para la prevención el riesgo de infección por medio del uso de agujas y jeringuillas. Las pruebas del conocimiento y rendimiento seis meses despues de la ensañanza mostraron un alto grado de retención de la materia presentada. La población con riesgo es capaz de reducir la contagia del virus de la inmunideficiencia humana (VIH). El impacto sería mayor con rendimiento perfecto, pero aun con rendimiento parcial, se puede contar con prevención con una exposición al cloro en exceso de 30 segundos.

RÉSUMÉ

L'évaluation du rappel et de la pratique d'usage requis pour nettoyer des aiguilles/seringues a été menée dans le Comté de Dade pour 393 utilisateurs de drogues injectables en 1988–1989. L'étude a été suscitée par une question de l'importance du nettoyage correct des aiguilles/seringues. Une procédure de rappel libre qui combinait l'examen cognitif et psychomoteur a offert un moyen

de vérifier la connaissance et la pratique. Les résultats ont montré que les utilizateurs de drogues injectables étaient capable d'apprendre et retenir la connaissance et la pratique nécessaires pour prévenir le risque d'infection causée par le VIH au moyen d'aiguilles/seringues. Des examens de la connaissance et de la pratique six mois aprés la formation ont montré un haut niveau du rappel du matériel appris. La population à risque est capable de réduire la propagation du VIH. L'impact pourrait être plus grand avec un usage parfait, mais même avec un usage partiel, quelque impact préventif pourrait être présumé à condition que le temps d'exposition à l'eau de Javel dépasse 30 secondes.

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Very Long-Term Users of Marijuana in the United States: A Pilot Study

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ABSTRACT

The authors recruited a sample of 37 Americans, aged 30–74, who had smoked marijuana on at least 5,000 separate occasions. These subjects were found to span a wide range of ethnic groups, educational backgrounds, occupations, and annual income; they did not display any obvious features which distinguished them from the population as a whole. They typically began smoking in the 1960s or early 1970s, and then continued to smoke heavily into middle adulthood because they felt that marijuana relieved unpleasant feeling states such as anxiety or depression. To our knowledge, individuals of this type have not previously been examined; further studies of older, long-term American marijuana users are needed.

Key words. Marijuana; Substance dependence; Demographics

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INTRODUCTION

Marijuana first became widely usèd in the United States in the 1960s, specifically among adolescents and young adults (Pope, 1972; Gruber et al., in press). Now, many of the individuals who first tried this drug as college students in the 1960s and 1970s have reached 40 to 50 years of age. Probably the great majority of these former users have ceased to use marijuana, but some have continued to smoke marijuana regularly into middle age. What are these long-term marijuana users like? Why have they continued to use marijuana heavily for years or decades of time?

Recently, we became engaged in designing a study to examine the residual neuropsychological effects of marijuana in long-term frequent users. In order to assess the feasibility of recruiting and studying such individuals, we performed a pilot study in 1995 to ascertain how many such subjects could be recruited in the vicinity of our center near Boston, Massachusetts. We present below the findings of this pilot study, which provides a "first glimpse" of a group of very long-term American marijuana users.

METHOD

For 2 weeks we ran advertisements in a community newspaper which is delivered free of charge to Boston and the surrounding suburbs. The advertisement specified simply, "Are you over the age of 30 and have you smoked marijuana? If so you may be eligible to receive $50 for a confidential interview."

Because we are seeking long-term frequent marijuana uses who might be candidates for a neuropsychological testing study, not all respondents to the advertisement were interviewed. Instead, those judged ineligible for a neuropsychological testing study were excluded during an initial telephone interview. The exclusion criteria were: 1) use of marijuana on less than 5,000 separate occasions (where "occasions" had to occur at least 1 hour apart in order to be counted as separate); 2) use of any other category of drugs (cocaine, phencyclidine, sedative/hypnotics, opioids, inhalants, or stimulants) more than 100 times during the subject's life; 3) consumption of alcohol at a rate of more than 5 drinks per day every day for 1 month or longer at any time in the subject's life; 4) current use of any prescribed medication with psychotropic properties; 5) history of a head injury with sustained loss of consciousness, or other neurological illness likely to affect neuropsychological performance; and 6) having not taken the Scholastic Aptitude Test (SAT) prior to the age of 20.

This last exclusion criterion was chosen because the investigators wanted to have some standardized measure of baseline cognitive functioning in the sub-

jects, and the SAT was judged to be the closest available approximation to this.

Subjects passing all of the above exclusion criteria were then invited for an interview. In this interview they were asked basic demographic questions; questions about history of marijuana and other drug use; and questions regarding positive and negative experiences associated with use of marijuana (described in more detail below). In addition, they were administered the Structured Clinical Interview for DSM-IV (SCID) (First et al., 1995) to determine lifetime history of DSM-IV Axis I disorders. Finally, they were asked whether they would be interested in participating at a later date in the investigators' proposed study of the neuropsychological effects of marijuana if funding were to be obtained.

RESULTS

Subject Selection

The investigators received 205 telephone calls in response to the advertisements. The process of selection of subjects from these calls is shown in Fig. 1. Of the 122 individuals who reported use of marijuana on more than 5,000 occasions, 72 (59%) were excluded for one or more of the reasons enumerated above. Thus, the 50 subjects invited for interview did not represent a random sample of all individuals in the investigators' area who had smoked marijuana more than 5,000 times.

Of the 50 subjects scheduled for interview, four failed to appear, and nine additional subjects were excluded on the basis of interview data because they gave information which proved to be discrepant with the information which they had given on telephone screening. These included five individuals who were found to have used marijuana less than 5,000 times in their lives, three who reported a history of cocaine abuse or dependence, and one who was using psychoactive medication to treat his obsessive compulsive disorder. Thus, the final sample consisted of 37 individuals.

Demographic Features

Table 1 summarizes some of the principal demographic features of the subjects. It will be seen that, despite the exclusion criteria used in the telephone screening, a diverse sample of subjects was seen, with both genders, several ethnic groups, and a wide range of ages and socioeconomic classes all represented. Almost all subjects were employed in careers for which they had trained. Interestingly, 14 (38%) of the 37 subjects worked in creative fields: they included musicians (4 subjects), artists (2), actors (2), interior designers (2), television producers (2), a photographer, and a writer.

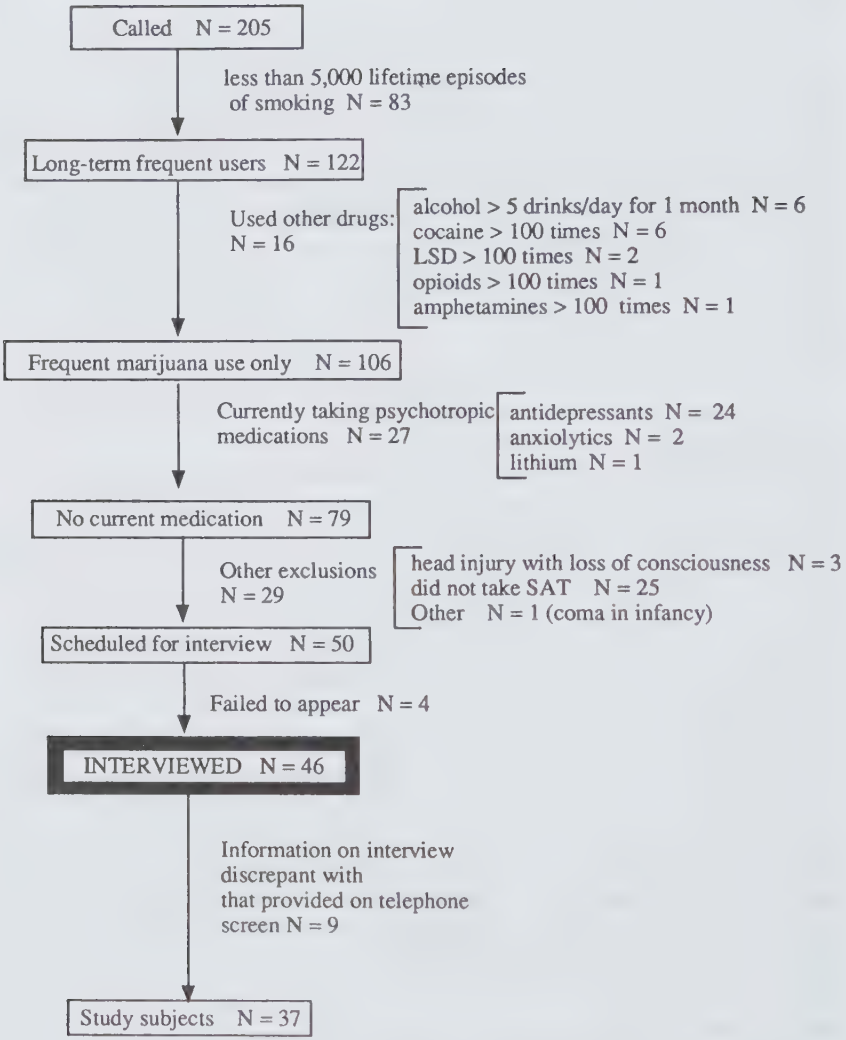
Called N = 205
less than 5,000 lifetime episodes of smoking N = 83
Long-term frequent users N = 122
Used other drugs: N = 16
alcohol > 5 drinks/day for 1 month N = 6
cocaine > 100 times N = 6
LSD > 100 times N = 2
opioids > 100 times N = 1
amphetamines > 100 times N = 1
Frequent marijuana use only N = 106
Currently taking psychotropic medications N = 27
antidepressants N = 24
anxiolytics N = 2
lithium N = 1
No current medication N = 79
Other exclusions N = 29
head injury with loss of consciousness N = 3
did not take SAT N = 25
Other N = 1 (coma in infancy)
Scheduled for interview N = 50
Failed to appear N = 4
INTERVIEWED N = 46
Information on interview discrepant with that provided on telephone screen N = 9
Study subjects N = 37

Fig. 1. Selection of subjects in the feasibility study.

Patterns of Marijuana Use

Summarized in Table 2 are subjects' past and present patterns of marijuana use. With few exceptions, the subjects reported a pattern of beginning to use marijuana socially, generally while in school. As work became a more important part of their lives, most developed a pattern of solitary use after work to relax. While a few have continued to use marijuana at their highest frequency

Table 1.

Selected Demographic Features of Long-Term Marijuana Users

	N (%)
Gender:	
Male	22 (59)
Female	15 (41)
Race:	
Caucasian	29 (78)
Hispanic	2 (5)
African-American	5 (14)
Native American	1 (3)
Age:	
30–34	8 (22)
35–39	6 (16)
40–44	7 (19)
45–49	8 (22)
50–54	6 (16)
55+	2 (5)
Annual income ($):	
0–15,000	5 (14)
15–30,000	10 (27)
30–60,000	15 (41)
60,000+	7 (19)
Level of education:	
Did not complete high school	3 (8)
Completed high school or obtained GED	12 (32)
Completed college	15 (41)
Postgraduate study	7 (19)
Marital status:	
Single	21 (57)
Married	9 (24)
Divorced	7 (19)
Employment:	
Creative positions	14 (38)
Service positions	7 (10)
Sales	4 (11)
Clerical	4 (11)
Entrepreneurs	2 (5)
Managerial	2 (5)
Technical	2 (5)
Unskilled	2 (5)

of use, most have decreased their level of use over time. Reasons given for decreasing use included: being unable to afford the increased price of marijuana, having more responsibility and less free time, and having fewer friends who used marijuana.

Table 2.

Selected Parameters of Marijuana Use

	N (%)
Age of initial marijuana use:	
10–14	5 (14)
15–19	23 (62)
20–24	4 (11)
25–29	4 (11)
over 29	1 (3)
Age of onset of regular marijuana use:	
10–14	2 (5)
15–19	23 (62)
20–24	7 (19)
25–29	4 (11)
over 29	1 (3)
Highest past frequency of use:	
1–30 times per month	6 (16)
Greater than 30 times per month	31 (84)
Current frequency of use:	
Less than once per month	11 (30)
1–30 times per month	9 (24)
Greater than 30 times per month	17 (46)
Changes in frequency of use:	
Quit completely	8 (22)
Decreased consumption	18 (49)
Continue at highest frequency of use	11 (30)
Number of lifetime episodes of smoking:[a]	
5–10,000	10 (27)
10–20,000	18 (49)
20–30,000	6 (16)
30,000+	3 (8)

[a]See text for definition of "episode."

Addiction and Dependence Potential

Most subjects reported occasions on which they had been able to discontinue use of marijuana without great difficulty. In addition to the 11 subjects shown in Table 1 who had stopped using marijuana completely, many of the other 26 subjects reported having stopped for periods of time. Reasons for stopping included: marijuana's increasing price, loss of connections necessary to obtain marijuana, pregnancy, setting a good example for children, and negative effect on work. No subject reported stopping marijuana use because of pressure from employers, family, or friends.

When recounting the experience of stopping, most subjects mentioned missing marijuana, largely because they enjoyed the effect. Some specifically stated that they felt that they were generally more happy when they were regularly using the drug. All but one subject denied major difficulties with stopping or continuing to remain abstinent. The one who reported difficulty was unable to stop despite great desire, effort, and the aid of Narcotics Anonymous. Several did recall feeling irritable, cranky, or "stressed out" during the first few weeks of abstinence, perhaps representing mild withdrawal symptoms. None reported expending great effort to obtain marijuana if it became unavailable.

Subjective Effects of Long-Term Marijuana Use

During the interview, subjects were asked whether they thought that their marijuana use had had a positive effect, a negative effect, or no effect on their social lives, careers, and ability to think and remember clearly. Their responses are summarized in Table 3.

Most subjects felt that marijuana use had either no effect or a positive effect on their social lives. Subjects claiming positive effects cited decreased anxiety in social situations, a structured environment for interacting with others, or decreased interpersonal boundaries. Four subjects, however, felt that marijuana caused them to focus on their own perceptions, thus increasing their isolation.

The majority of subjects felt that their marijuana use had not affected their careers, but most reported that they did not use marijuana at work because they believed that the acute effects of marijuana would impair their performance. Those reporting that marijuana had a positive effect on their career believed that it made them more creative or more relaxed, and thus more effective. Of the five reporting a negative effect on their work, three described a lack of ambition and motivation when smoking regularly.

Table 3.

Selected Subjective Effects of Long-Term Marijuana Use

	Subjective effect *N* (%)		
	Positive	None	Negative
Social life	13 (35)	20 (54)	4 (11)
Career	7 (19)	25 (68)	5 (14)
Cognitive functioning	3 (8)	17 (46)	17 (46)

Almost half of the subjects thought that marijuana had a negative effect on their cognitive abilities. Several of the subjects who had stopped using marijuana for periods of time commented that after a few weeks, they felt as if they were "coming out of a fog." The three subjects reporting a positive effect on cognition felt that their marijuana use improved their thinking by giving them a different perspective.

Relationship between Marijuana and Affective State

The subjects were also asked whether marijuana had any relationship to depression or anxiety. These responses are summarized in Table 4. It will be seen that subjects generally reported that marijuana produced relief from depression and anxiety rather than exacerbation of these conditions. Indeed, several subjects reported that they actively sought out marijuana when they felt depressed, and one reported that if she did not use marijuana daily, she developed depressive symptoms. Others reported that they used the drug to relieve stress, to relax, and to go to sleep at the end of the day. Four subjects stated that they found that marijuana decreased their anxiety in social situations, and that they subsequently used it prior to social situations to avoid social anxiety. Three subjects stated that they used marijuana to counteract irritability; another reported that he used marijuana to decrease pain following a myocardial infarction; and two stated that they used marijuana to decrease the frequency and severity of migraines.

Table 4.

Relationship between Marijuana Use and Affective State

	Perceived relationship *N* (%)		
	Never	Occasionally	Frequently
Use leads to depression	32 (86)	4 (11)	1 (3)
Use relieves depression	19 (51)	4 (11)	14 (38)
Use leads to anxiety	25 (68)	12 (32)	0 (0)
Use relieves anxiety	11 (30)	6 (16)	20 (54)

CONCLUSIONS

The investigators performed a feasibility study to ascertain their ability to recruit long-term frequent users of marijuana for a proposed future study using neuropsychological testing. Although the findings of this feasibility study must be regarded as only preliminary impressions, they nevertheless provide an interesting glimpse at a group of Americans who have smoked marijuana on more than 5,000 occasions. It appears that these individuals are a highly varied group, with both genders, several ethnic groups, and a wide range of ages and socioeconomic classes all represented. These long-term frequent users frequently claimed that marijuana had helped to alleviate unpleasant psychological states such as depression or anxiety; they generally denied serious impairment in their social or occupational functioning as a result of using marijuana.

These findings appear generally in accord with other studies which have compared regular marijuana users with nonusers in American college populations (Zinberg and Weil, 1970; Walters et al., 1972; Kupfer et al., 1973; Hochman and Brill, 1973; Brill and Christie, 1974; Pope et al., 1981, 1990) and in members of the general population in other countries (Comitas, 1976; Souief, 1975–76; Carter and Doughty, 1976). These investigations have typically found few differences between frequent marijuana users and nonusers of measures of social, occupational, or academic functioning. Indeed, even those studies which have found differences have often remarked that these differences were modest, or else noted confounding variables (such as use of other substances) which might account for the findings observed (Robins et al., 1970; Hogan et al., 1970; Mirin et al., 1971; Boulougouris et al., 1976; Bourque et al., 1991). The few studies noting differences in the features of marijuana users and nonusers in other countries may similarly have been affected by confounding variables, such as cultural factors (Sharma, 1975; Mehndiratta, 1975–76). Thus, the present study, looking for the first time at a group of Americans with very long-term marijuana use, seems congruent with previous studies in finding that frequent marijuana users do not display any striking features, at least on a screening interview, which sharply distinguish them from the rest of the population.

Various other studies have investigated differences in attributes between frequent and "light" marijuana users. In a recent paper (Kouri et al., 1995) we published a comparison of frequent and "light" marijuana users from an American college population, and have provided a more extensive review of other published studies of the attributes of these groups. Also, looking at the more specific issue of neuropsychological impairment in frequent vs. "light"

marijuana users (a question not assessed in the present, preliminary study), the reader is again referred to the large literature of available studies, which we have reviewed in detail elsewhere. In Table 5 we present a summary of some of the major studies which have investigated the relationship between marijuana use and various indices of social, occupational, and cognitive function. Much of the apparent differences among the findings of these studies may be attributable to various methodological limitations. These include difficulties in matching heavy marijuana users and controls on various potentially confounding variables, failure to control for use of drugs other than marijuana, and the limited number of performance measures assessed in most of the investigations. Our present study, of course, does not provide systematic data on the consequences of very long-term heavy marijuana use—but shows that a population of such users can be readily recruited for study.

It must be recognized that our findings are limited by the potential effects of selection bias. First, individuals experiencing prominent adverse effects from marijuana dependence might have been less likely to respond to our advertisement; if so, then the sample may have been biased in favor of an unusually high-functioning group of frequent marijuana users. On the other hand, it might be argued that high-functioning users would be more affluent and more busy than poorly functioning users, and hence less likely to telephone in response to an advertisement offering $50 compensation for an interview.

Second, we performed a further selection of our own when screening the subjects by telephone. Of the 59% of subjects who had smoked marijuana more than 5,000 times, but who were eliminated on the telephone, many were either presently using psychoactive medications (for example, receiving antidepressant treatment) or described a history of frequent use of alcohol or another drug. Thus, the telephone screen would be expected to have yielded a group of subjects with a lower rate of comorbid DSM-IV Axis I disorders than would be expected among long-term frequent marijuana users as a whole (Miller, 1990; Brady et al., 1991; Alterman et al., 1982; Miller et al., 1989, 1990; Weller and Halikas, 1985; Henry et al., 1993). Also, our requirement that subjects would have taken the SAT would be expected to bias the sample in favor of a higher educational level than would otherwise be the case.

Third, perhaps the strongest selection effect was performed by the subjects themselves; individuals who choose to continue smoking marijuana frequently over a period of many years will presumably tend to be those who find the effects pleasant and reinforcing, and who have not experienced severe adverse consequences. In other words, there may be many individuals who experienced undesirable effects of marijuana and therefore discontinued use of the drug long before they reached the cumulative level of use necessary to be eligible for the present study.

Table 5.

Effects of Marijuana Use on Social, Occupational, and Cognitive Functioning: Selected Parameters and Studies

Study	Country	Subjects/controls			Measurement tool(s)[c]	Findings[d]			
		Subjects[a]	Controls[a]	Pattern of use[b]		C	A	O	S
Satz et al., 1976	Costa Rica	41 M	41 M	F/N	NPB	+	NM	NM	NM
Page et al., 1988	Costa Rica	27 M	30 M	F/N	NPB, I, O	+	NM	+	+
Soueif, 1971, 1976a, 1976b	Egypt	850 M	839 M	O-F/N	NPB, SI	+	–	–	–
Stefanis et al., 1976	Greece	47 M	40 M	F/N	NPB, SI	–	–	–	–
Chopra and Jandu, 1976	India	275 M	—	F (range)/—	I	NM	–	–	–
Mendhiratta and Wig, 1975–1976	India	50 M	25 M	F/N	SI	NM	NM	+	+
Wig and Varma, 1977	India	23 M	11 M	F/N	NPB	+	NM	NM	NM
Mendhiratta et al., 1978	India	50 M	25 M	F/N	NPB	+	NM	NM	NM
Varma et al., 1988	India	26 M	26 M	F/N	NPB, SI	+	NM	+	+
Mendhiratta et al., 1988	India	25 M	15 M	F/N	NPB	+	NM	NM	NM
Comitas, 1976	Jamaica	37 M	23 M	O-F/N	NPB, SI	–	–	–	–
Sharma, 1975	Nepal	226 M	226 M	M-F/N	I	NM	NM	–	–
Robins et al., 1970	US	221 M	—	N-F/—	SI	NM	–	–	–
Mirin et al., 1971	US	12 M	12 M	F/O	SI	NM	–	+	+
Hochman and Brill, 1973	US	1380 M,F	—	N-F/—	Q, SI	NM	–	–	–
Kandel, 1984	US	1325 M,F	—	N-F/—	SI	NM	NM	+	+
Pope et al., 1990	US	369 M,F	—	N-?/—	Q	NM	–	NM	–
Bourque et al., 1991	US	277 M,F	County residents	F/?	SI	NM	–	–	–

[a]Cohort studies = subjects are described; recruitment studies = subject and control groups are described; M = male; F = female.

[b]Pattern of use: F = frequent (daily); M = moderate (1–7 times per week); O = occasional (less than once per week); N = no previous use.

[c]NPB = neuropsychological battery; I = interview; O = observation; SI = structured interview; Q = questionnaire.

[d]Variables: C = cognitive; A = academic achievement; O = occupational achievement; S = social adaptation; + = higher frequency of use correlated impairment; – = frequency of use not correlated with impairment; NM = variable not measured.

Despite these limitations, however, this study provides several useful preliminary impressions about Americans who have smoked marijuana over the very long term. First, it appears that an abundant number of such individuals exist; they span a wide range of ages and social classes, and are easily recruited for study. Thus, it seems both feasible and important to examine this group more systematically in subsequent investigations. Second, these individual share no obvious demographic or clinical characteristics which distinguish them from other individuals in our society. More detailed investigations will be required to ascertain whether there are any more subtle features which do characterize such individuals, or which predispose them to become long-term frequent uses while others do not. Tentatively, it appears that one such feature may be the experience that marijuana relieves anxiety, depression, or other unpleasant feeling states.

Finally, the present study found no obvious evidence of severe social, occupational, or neuropsychological impairment among long-term frequent marijuana users. However, this impression is based only on a crude assessment: the interview used in the present study was not designed to perform a sensitive assessment of cognitive function, and it is possible that important residual effects of marijuana might have been missed. Thus, detailed studies of neuropsychological function in frequent users will be critical to determine whether the cognitive effects of long-term marijuana use represent a serious public health problem in the United States.

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RESUMEN

Los autores estudiaron una muestra de 37 Americanos de 30–74 años de edad, que han fumado marihuana en al menos 5,000 distintas ocaciones. Los sujetos eran de diferente procedencia étnica, nivel educacional, situación laboral, e ingresos económicos; no presentaron ningún tipo de diferencia con respecto a la población general. Este grupo típicamente empezó a fumar marihuana en los años 1960 o a principios de los 1970, y continuaron fumando regularmente al illegar a adultos ya que manifestaron que fumar marihuana les ayudaba a deshacerse de sensaciones desagradables del tipo de ansiedad o depresión. Los autores no conocen de otros estudios publicados que hayan estudiado personas de éstas características; futuros estudios de personas mayores que han fumado marihuana durante muchos años son necesarios.

RÉSUMÉ

L'étude porte sur un échantillon de 37 américains, agés de 30 à 74 ans, qui ont fumé de la marijuana au minimum à 5,000 reprises. On trouve chez ces sujets un large évantail de groupes ethniques, de niveaux éducatifs, d'activités, et de revenus annuels; on ne repère pas de characteristiques manifestes qui les distinguent de l'ensemble de la population. Typiquement, ils ont commencé à fumer dans les années 60 et 70, et ils ont poursuivi à forte cadence à la

maturité parce qu'ils ressentaient un effet de soulagement agréable de la marijuana sur leurs humeurs anxieuses ou dépressives. A notre connaissance, de tels sujets n'ont pas été examinés jusqu'à présent; des études ultérieures de sujets américains plus agés, consommateurs à long tenure de marijuana, sont souhaitables.

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Immediate Impact of Thirty-Two Drug Use Prevention Activities among Students at Continuation High Schools

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ABSTRACT

Those teenagers who are unable to remain in the regular school system for reasons including substance use are transferred to a continuation high school. Generic comprehensive social-influence-drug-use-prevention-activities are less likely to be effective for use with these at risk youth. Thus, both classroom and self-instruction (main mode of instruction at continuation high schools) versions of 16 activities derived from different theoretical sources were tested and ranked on immediate outcome variables. 388 students from six continuation high schools were provided with a pretest–activity–posttest "component study" protocol. The scores on perceived quality ratings were standardized and averaged to permit easy comparisons across lessons. While yielding similar knowledge changes, students who received the

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health educator led activity consistently reported higher scores on perceived quality. Social influence-oriented lessons, in general, were rated of relatively low perceived quality. The present approach assisted in selection of the lessons with the greatest overall immediate impact.

Key words. Immediate impact; Drug abuse prevention

INTRODUCTION

Continuation (*alternative*) versus comprehensive (*regular*) high schools form a natural demarcation of youth who are at relatively high or low risk for substance use in the State of California. When reaching high school age, those youth who are unable to remain in the comprehensive school system for functional reasons, including substance use, are transferred to a continuation high school. An implicit goal of a continuation high school is to help channel these students back into mainstream society. Effective substance use prevention programming for these students is imperative for many of them to achieve the goal of being mainstreamed (i.e., return to regular high schools or at least learn more conventional values). Unfortunately, most prevention programming has not been adapted or applied to such students. Drug use prevention programming is sorely needed because individuals at these schools may be at a critical juncture for either returning to the mainstream or transitioning to more problematic behaviors, including drug use. Thus, students from continuation high schools represent an underserved as well as high risk (for drug use) population.

Previous work by the present research group as well as others indicates that a generic comprehensive social influence curriculum is less likely to be effective for use with the present at-risk population (e.g., see Dent et al., 1996; Newcomb and Bentler, 1989; Sussman et al., 1995b, 1995c; Tobler, 1986). For example, while continuation high school students acknowledge the operation of social influence in facilitating their drug use behavior (Sussman et al., 1995b, 1995c), they tend to endorse as means of prevention instruction in alternatives to drug use, lessons which teach chemical dependency recovery and drug counseling, lessons which impart physical consequences information, or lessons which impart life skills (Dent et al., 1996; Sussman et al., 1995c; Swisher and Hu, 1983). In addition, they react negatively to refusal assertion training and practice, which has been considered the prototypical social influence strategy (Dent et al., 1996; Sussman et al., 1995a, 1995b) even though it may not provide a "stand alone" preventive effect with lower risk samples (MacKinnon et al., 1991; Sussman et al., 1995a).

Based on the results of this previous curriculum development research, 16 activities were considered for testing as lessons in the present study (as indicated in Appendix A). These activities included four that were derived from *generic social influence* programming (e.g., see Glynn, 1989; Sussman et al., 1995b), three that were derived from *life skills and behavior therapy*-related material (e.g., Botvin and Eng, 1979; Wills, 1986), four that were *motivational-oriented* and were derived from social or health psychology research areas (stereotyping, see Fishkin et al., 1993; physical consequences research, see Sussman et al., 1995a, pp. 57–63; health as a value, see Lau et al., 1986, and Sussman et al., 1993; attitudinal perspectives, see Upshaw and Ostrom, 1984), and five that were derived from *recovery movement* and teenage drug use literature (Kinney and Leaton, 1982; Newcomb and Bentler, 1988; Schwartz et al., 1985; Shields and Whitehall, 1994; Sykes and Matza, 1957; Williams and Knight, 1994; Winters et al., 1993).

Another issue in the implementation of a curriculum among youth in continuation high schools, and others in alternative educational programs, is the relatively greater emphasis often placed on self-instruction of material versus teacher-led instruction. While continuation high school students typically work independently using self-instruction materials, knowledge change may be enhanced through active participation in lesson activities (e.g., Ennett et al., 1994; Sussman et al., 1995b). However, the impact of delivery mode (health-educator-led versus self-instruction) on immediate outcome variables such as students' perceptions of interest, helpfulness, learning, and liking is not known.

The present study examines the association between delivery mode and students' perceptions of the utility of the lessons. Both classroom (teacher led) and self-instruction versions of 16 lessons selected from the four above-mentioned research areas were tested and ranked on knowledge and perceived quality immediate outcome variables (i.e., a total of 32 activities were tested). This component study procedure serves as one major step in an empirically-based curriculum development process. Relatively impactful lessons from either mode of instruction are retained for subsequent construction of a complete curriculum (Sussman, 1991; Sussman et al., 1995a).

METHOD

Subjects

A total of 388 students from six continuation high schools were provided with a pretest–activity–posttest component study protocol in the fall of 1993. Background characteristics are shown in Table 1. The sample is the same as

Table 1.

Selected Subjects' Characteristics (n = 388)

Gender:	
Male	59%
Ethnic composition:	
African-American	6%
Latino	54%
White	28%
Asian	2%
Native American	2%
Other ethnicity	8%
Living situation:	
Both parents	44%
Mother/stepmother only	27%
Father/stepfather only	7%
Other person(s)	22%
Parents' education:	
Father: completed four year college	16%
Mother: completed four year college	12%
Father: some college/job training	14%
Mother: some college/job training	21%
Father: graduated from high school	29%
Mother: graduated from high school	31%
Father: attended some high school	26%
Mother: attended some high school	25%
Father: less than eighth grade	7%
Mother: less than eighth grade	6%
Father: missing data	8%
Mother: missing data	5%
Age:	
Mean years (range = 15–19, SD = 0.8)	16.7
Weekly drug use:	
Cigarettes	53%
Alcohol	37%
Marijuana	43%
Stimulants	12%
Length of time at that school:	
Mean months (range = 0.5–4.0, SD = 10.1)	9.9

appears in Study Two of another paper (Sussman et al., 1997), although the variables examined and substantive contents of the two papers are different.

Procedure and Instrument

Six classes were selected randomly from each of five schools, and two classes were selected randomly from a sixth school, to be involved in the

present evaluation. An equal number of classes within each school (approximately 10 students per class) were provided with either the health-educator-led or the self-instruction versions of the same lessons in a 3-day format. Each 3-day sequence was provided as a minicurriculum at five schools (*N*s ranged from 61 to 78 per school). Each sequence consisted of a pretest followed by the first lesson, then a posttest related to that lesson; a second lesson followed by a posttest specifically tailored for that lesson, accomplished on the second day; then a third lesson followed by a posttest anchored specifically to that lesson, completed on the third day. The specific lesson combinations, in order of delivery—first through third lesson—were: chemical dependency, funeral, and stereotyping at one school; listening, talk show, and self-control at a second school; coping with stress, apathy, and self-esteem at a third school; decision making, health as a value, and family roles at a fourth school; and myth correction, effective communication, and perspectives at a fifth school. At a sixth school, youth only viewed the video lesson paired with class discussion or with self-instruction materials ($n = 37$).

The staff and students were assessed and instructed by one of two trained health educators/data collectors, including a 29-year-old Mexican-American female who held a B.S. degree and a 45-year-old White female who held an A.A. degree. These data collectors shared extensive experience in the field of education and a background of working with high risk students. Their educational backgrounds included course work in administration, education, psychology, sociology, or "drug abuse" prevention.

Students were informed that this was a research study and that their input was important to help develop effective drug use prevention programming for students in their age group. They also were informed that their responses were confidential and anonymous. In addition, they were informed that their participation was voluntary and that they could withdraw at any time without penalty. The participation decline rate was 3%.

For each lesson, students were asked to answer four lesson-specific forced choice knowledge items. For example, in the listening lesson posttest, students completed an item which reads "Hearing part of what a person is saying is an example of. . . ." The response choices are "a. selective attention," "b. selective listening" (correct answer), and "c. skimming for information." Also, for each lesson, students were asked to rate the lesson on interest level, how much they felt they had learned from participating in the lesson, and the helpfulness of the lesson (to not use drugs). As shown in Appendix B, four response choices were offered (4-point rating scales) for each of these questions. The response choices ranged from "very" to "not at all." Students also were asked to rate each lesson according to how much they liked it. Eleven response choices were offered for the liking question. The response choices ranged from "did not like it" to "liked it very much."

Analysis

Descriptive statistics were used to analyze these data at posttest. For the knowledge items, the percentage of correct responses for each item was calculated. Also, the average correct score across items within each lesson was calculated to produce a knowledge index. Mean scores were calculated for the four quality ratings (interest, learning, helpfulness, liking). The scores on the four quality ratings were standardized and averaged to create an index score that is on the same scale for each lesson. The knowledge and perceived quality index scores permit easy comparisons across lessons. A multivariate analysis of variance procedure was used to generate an average critical value of significance for the perceived quality index. Each of three lessons, in each of five sets of minicurricula, was treated as a separate outcome on which perceived quality index scores were calculated. In addition, gender and ethnicity were entered as between-subjects concurrent predictors. An overall critical F value was calculated based on model Fs obtained for each of five minicurriculum sets, treating the perceived quality index as the outcome variable. In addition, all of the analyses were calculated separately for the two delivery modes. Another two models were calculated for the video lesson. The minimally significant F score of 12 such scores was determined (i.e., 5 curriculum sets times 2 modes of delivery plus 1 video lesson times 2 modes of delivery), and this score was considered to be the overall critical F value. This critical F value was converted to a standardized mean difference score. There was little variation in numbers of subjects per model [*n*s ranged from 20 (the video lesson) to between 30 to 40 (all other lessons)].

RESULTS AND DISCUSSION

The percentage of students who responded correctly to each knowledge index are shown in Table 2. Overall, it appears that the class instruction and the self-instruction versions of the lessons yielded similar knowledge changes.

The results regarding the perceived quality of the lessons are shown in Table 3. Students who received the health-educator-led activity consistently reported higher scores on all four measures of perceived quality. Once the scores for the four quality ratings were standardized and averaged, the difference in ratings of perceived quality across mode of delivery became even more clear in favor of the health-educator-led activities (see Table 4). The critical value which indicates a significant difference in perceived quality between the standardized ratings of the activities is 0.30. Any two activities can be compared using this critical difference value. Of the nine top ranked activities considered across type of instruction, four were derived from the recovery

Table 2.

Percentage of Correct Responses on Posttest Knowledge Indices for Each Activity by Delivery Mode

Lesson ID	Lesson name	Health educator	Self-instruction
1	Listening/involvement	78.3	72.8
2	Chemical dependency	42.8	39.5
3	Talk show	65.7	62.8
4	Funeral	75.7	69.6
5	Norm/recovery	55.0	60.2
6	Provocative behavior	62.4	64.5
7	Stereotyping	74.4	71.7
8	Decision making	62.0	73.3
9	Health as a value	76.0	61.1
10	Coping with stress	50.9	55.8
11	Family roles	73.9	76.7
12	Apathy	69.3	76.2
13	Self-esteem	72.8	80.9
14	Perspectives	61.2	52.2
15	Confronting myths	56.4	48.8
16	Effective communication	66.4	54.5
	Average percentage correct	65.2	63.8

movement literature ("funeral"—dealing with life-threatening consequences of drug use; "talk show"—dealing with themes of enabling; drug use myths—confronting notions of denial; and "family roles"—dealing with the effects of drug abuse on the family system), three were from motivational-oriented literature (stereotyping, attitudinal perspective taking, and health as a value), one was from life skills-related literature (effective communication), and one was from generic comprehensive social influence programming (decision making/commitment). Seven of these nine lessons also were rated as among those which had obtained the nine highest percentage correct scores for either or both modes of delivery (drug use myths and attitudinal perspective taking were exceptions).

The next step was to determine which of the 32 lessons to include when pilot testing a complete curriculum (see Sussman, 1991). The project staff decided to begin testing the feasibility and immediate impact of a 12-lesson curriculum with the intention of eliminating lessons as the need arose. A 12-lesson curriculum could be administered over a course of 4 weeks with the students receiving three lessons a week. After this first test of a complete curriculum, it was reduced to nine lessons to maximize the likelihood that

Table 3.

Students' Perceptions of the Quality of the Lesson by Delivery Mode[a]

	Health educator delivery mode			
Lesson ID	Interesting	Learned	Helped	Liked
1	2.1	1.6	0.8	6.2
2	1.7	1.6	1.5	5.8
3	2.5	2.1	1.5	8.3
4	2.3	2.0	1.5	6.3
5	1.5	1.0	1.2	5.0
6	2.1	2.0	1.2	6.5
7	2.1	2.2	1.5	6.1
8	2.1	1.8	1.4	6.5
9	1.9	1.9	1.3	6.7
10	1.6	1.4	1.1	4.9
11	2.0	2.0	1.8	6.8
12	1.7	1.6	1.0	5.2
13	1.8	1.5	0.8	5.8
14	2.5	2.1	1.5	7.3
15	2.2	1.8	1.2	6.6
16	2.3	2.3	1.2	7.1
Average	2.0	1.8	1.3	6.3
	Self-instruction delivery mode			
Lesson ID	Interesting	Learned	Helped	Liked
1	1.6	1.3	0.7	4.9
2	1.4	1.4	1.0	4.4
3	1.5	1.3	1.0	5.4
4	1.9	1.5	1.9	5.9
5	1.6	1.4	1.3	4.7
6	1.4	1.2	0.9	5.0
7	1.8	2.0	1.8	6.1
8	1.7	1.4	1.1	5.2
9	1.7	1.5	1.5	5.7
10	1.5	1.4	0.9	5.3
11	1.6	1.5	1.2	4.2
12	1.6	1.5	1.0	4.7
13	1.3	1.2	1.0	4.6
14	1.7	1.5	1.5	5.3
15	1.7	1.8	1.2	5.1
16	1.2	1.4	1.2	4.3
Average	1.6	1.5	1.2	5.1

[a]1 = not at all, 4 = very (interesting, helpful, learned); 0 = did not like, 10 = liked very much.

Table 4.

Standardized Index of Perceived Quality[a]

Lesson ID	Lesson name	Health educator	Self-instruction	Combined
1	Listening/involvement	.01	−.37	−.15
2	Chemical dependency	.05	−.35	−.08
3	Talk show	.59	−.27	.21
4	Funeral	.35	.15	.28
5	Norm/recovery	−.35	−.24	−.28
6	Provocative behavior	.21	−.38	−.04
7	Stereotyping	.29	.25	.27
8	Decision making	.22	−.22	−.01
9	Health as a value	.19	.00	.08
10	Coping with stress	−.27	−.25	−.26
11	Family roles	.34	−.24	.07
12	Apathy	−.16	−.26	−.21
13	Self-esteem	−.16	−.47	−.32
14	Perspectives	.49	−.09	.19
15	Confronting myths	.25	−.07	.11
16	Effective communication	.53	−.40	.24

[a]The measure consists of the average of the liking, interest, helpfulness, and learning responses. The index was coded −1, 0, 1.

schools would permit delivery of the curriculum. In addition, when piloting self-instruction against health-educator-led lessons with the same students, students consistently verbalized preference for the health-educator-led lessons. Thus, the final curriculum was health-educator-led. After two rounds of pilot testing, the final nine-lesson curriculum "product" included a introductory lesson (which combined listening and effective communication skills), the stereotyping lesson, the myth confrontation lesson, the chemical dependency lesson (which incorporated family roles and funeral-related material), the "talk show" lesson, the health as a value lesson (which incorporated stress-coping material), the self-control lesson (provocative behavior, favorably rated in the health educator format in the present component study), the perspectives lesson, and the decision making/commitment lesson, in that order (see Sussman, 1996).

There are several limitations to empirical curriculum development studies such as this one. First, when lessons are combined they may add or detract from each other. Such contrast effects can not be examined when assessing a single activity or lesson. For example, as just mentioned regarding a subsequent pilot study which tested a complete curriculum, the self-instruction lessons were very disliked when contrasted directly with health educatorn led lessons. Sec-

ond, only immediate impact is assessed; the effects on substance use is not known until much later and usually is not assessed with this type of study. However, such perceived quality ratings may be a good predictor of later drug use (Sussman, Petosa, and Clarke, in press). Finally, there also is the possibility that youths' preferences may be in error, that they are not capable of selecting material that is helpful for them. Our experience is to the converse; youths are good consumers of their own health behavior, and results obtained with relatively small sample sizes do generalize to larger samples (e.g., Sussman et al., 1995). Also, the present data is consistent with some available meta-analyses and suggestions that motivation to change be addressed among high risk youth (e.g., Tobler, 1986). This pretest-activity-posttest component study remains a reasonable means to build a curriculum, and it places constraints on the potential subjective biases of the curriculum writer.

APPENDIX A: THE SIXTEEN TYPES OF ACTIVITIES EXAMINED*

Derived from Generic Comprehensive Social Influence Programming:
- Listening/involvement (1)
- Physical consequences information (2)
- Decision making/commitment (8)
- Self-esteem enhancement (13)

Derived from Life Skills and Behavior Therapy-Related Material:
- Effective communication skills (16)
- Controlling provocative behavior (self-control; 6)
- Coping with stress (10)

Derived from "Other" Social and Health Psychology Literature:
- Correcting stereotypes about continuation high school youth, including drug use prevalence overestimates reduction (7)
- Funeral enactment of someone who died of "drug abuse" (4)
- Increasing the importance of health as a value (9)
- Attitudinal perspective taking (14)

Derived from "Recovery Movement" Literature and Ideas:
- Talk show (simulated characters discuss the negative consequences of drug use on themselves or others; 3)
- Videotaped interviews of recovery (norm/recovery; anti-"drug use" attitudes are stated and subsequent success experiences of previous continuation high school youth are shared; 5)
- Family roles and chemical dependency (effects of "drug use" on the family system; 11)

*Lesson ID is indicated in parentheses.

Apathy and drug use (12)
Confronting the myths that adolescents hold regarding the use of drugs (15)

APPENDIX B: POSTTEST QUALITY EVALUATION ITEMS

Please Circle One

1. How interesting do you think it was to do this lesson?
   a. very interesting
   b. moderately interesting
   c. a little interesting
   d. not at all interesting
2. How much do you think you learned from doing this lesson?
   a. learned very much
   b. learned somewhat
   c. learned a little
   d. did not learn anything at all
3. How much do you think this lesson helped you to not increase your drug use or to not start using?
   a. very helpful
   b. moderately helpful
   c. a little helpful
   d. not at all helpful
4. How much did you like today's lesson? Circle a number that indicates your feeling. 0 means that you didn't like it at all; 10 means that you liked it very much.

0 1 2 3 4 5 6 7 8 9 10
did not like it liked it very much

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RESUMEN

Los adolescentes que no pueden continuar en el sistema escolar regular por razones que incluyen el uso de sustancias, son transferidos a una escuela secundaria de continuación. Las actividades genéricas completas de prevención del abuso de drogas por medio de la influencia social tienen menos probabilidad de ser efectivas con estos jóvenes que están en riesgo. Por lo tanto, dos versiones de instrucción, que se componen de 16 actividades derivadas de diferentes fuentes teóricas, fueron puestas a prueba y evaluadas sobre la base de variables de resultado inmediato. Estas versiones son la instrucción en la clase y la auto-instrucción (la cual es el modo principal de instrucción en la escuela secundaria). Los estudiantes provenientes de seis escuelas secundarias de continuación recibieron un protocolo de "estudio del componnete" que va desde el período que precede a la prueba, seguido de las actividades, hasta el período que le sigue a la prueba. Los resultados obtenidos en las evaluaciones de calidad percibida fueron uniformados y se estableció un promedio para poder comparar las leciones más fácilmente. Aunque se mostraron cambios similares de conocimiento, los estudiantes que recibieron la actividad dirigida por un educador de la salud consistentemente reportaron puntajes más altos en cuanto a la calidad percibida. Las lecciones orientadas a la influencia social, en general, fueran evaluadas y la calidad percibida de las mismas fue relativamente baja. El enfoque actual ayudó en la selección de las lecciones que tienen el mayor impacto general inmediato.

RÉSUMÉ

Les adolescents qui ne parviennent pas à se maintenir dans le système scolaire normal pour des raisons comprenant l'utilisation de la drogue sont transférés dans un lycée de continuation. Les activités de prévention de la drogue à influence sociale générique d'ensemble risequent de s'avérer moins efficaces chez ces jeunes à risque. C'est pourquoi deux versions d'instruction comprenant 16

activités dérivées de différentes sources théoriques ont été mises à l'épreuve et évaluées sur la base de variables à résultat immédiat. Ces versions comprennent les études avec enseignant et les études personnelles (cette dernière catégorie constitue le mode d'enseignement principal dans les écoles de continuation). Des étudiants provenant de six lycées de continuation ont reçu un protocole d' "étude constituante" allant de la période qui précède l'examen, suivie des activités, à la periode qui suit l'examen. Les points obtenus pour les évaluations de la qualité perçue ont été uniformisés et une moyenne a été établie pour mieux comparer les leçons. Bien que les modifications du savoir aient été semblables, les étudiants ayant pris part aux activités dirigées par un enseignant en santé ont uniformément obtenu de meilleurs points en matière de qualité perçue. En général, les leçons à influence sociale ont été evaluées et leur qualité perçue a été jugée assez basse. La méthode d'attaque du moment aidait à choisir les leçons ayant l'impact d'ensemble immédiat le plus élevé.

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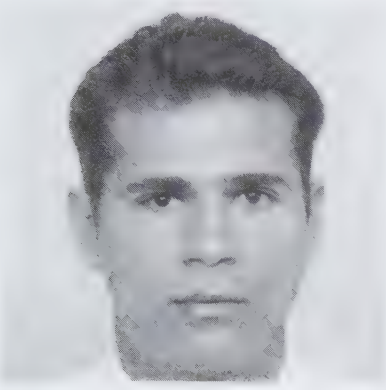

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Topic-Focused Bibliography

A Selected Bibliography on the Drug Use(r) "Career"

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ABSTRACT

This paper provides a brief discussion of the issues in examining "heavy" drug use in terms of a "career." This is an old paradigm in drug user research, and one that has produced some of the richest descriptions in the literature. It draws on the analytic approach developed to study other criminal activity in terms of "criminal careers" as well as the literature describing the variety of career "patterns" for substance users. Research into drug user careers is focused on the most serious, chronic substance users and examines the predictors of transition from lower level involvement to higher levels of involvement. Their use differs from that of experimental or social-recreational use in terms of its frequency and its significance in the user's life. The bibliography is divided into two general headings: research which described drug use careers and methodological issues in studying drug use careers. It ranges from classic narratives of the lives of drug users to discussions of the problems of trying to characterize accurately or to follow complex lives over time.

Key words. Drug use; Drug career; Methodology

Examining "heavy" drug use in terms of a "career" is an old paradigm in drug user research, and one that has produced some of the richest descriptions in the anthropology and sociology literature. In recent years the study of drug use(r) careers has also drawn on an analytic approach developed to study

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other criminal activity in terms of "criminal careers" (Blumstein et al., 1986). Theoretically, crime "careers" can vary from those of offenders who commit a single crime to those of "career criminals," persons who commit serious crimes at high frequency over the course of many years. Similarly, a drug use(r) career can vary from a brief episode of "substance abuse" followed by lifelong "recovery" to "career drug use"—a pattern which involves successive episodes of "heavy" drug use and abstinence over the course of many years. As with career offenders, there are a variety of career "patterns" for substance users. Some users have periods of intense use in their teens and twenties followed by "maturing out" (Winick, 1962) of both the behavior and the lifestyle; others have complex careers spanning twenty or thirty years (Anglin and Speckart, 1986; Courtwright et al., 1989).

Research into drug use(r) careers is focused on the most serious, chronic substance users and examines the predictors of transition from lower level involvement to higher levels of involvement. It is the chronic user who Inciardi (1995) terms the "involved user" or the "dysfunctional user." Their use differs from that of experimental or social-recreational use in terms of its frequency and its significance in the user's life. For career users, drugs (and often a particular drug) play a central role in their social, financial, and psychological life. The millions of smokers dependent upon nicotine have a glimpse into this world where activities may be altered to fit smoking habits or behavior may be continued even in the face of medical advice to the contrary. In its most dysfunctional form, the substance becomes a defining principle.

The career paradigm for examining substance use is common in two contexts:

- The examination of outcomes of events like drug user treatment
- Studies of the life histories of "heavy" drug users

There is substantial variation in the lives of persons who use illegal drugs at high frequency and in large quantities, variation related to economic circumstances, education, and even gender. However, the nature of "heavy" use in Western cultures is remarkably consistent across user types; that is, "heavy" use is a chronic, relapsing condition which, with or without treatment, involves repeated cycles of moderate use, misuse, and abstinence.

Most commonly, substance use(r) careers, documented in studies for over fifty years, involve onset of drug use in the teen years, progression to "heavy use" or dependence over a number of months or years, followed by repeated cycles or episodes of use and abstinence. Patterns of fairly healthy functioning by drug users are rare in the literature (Waldorf, Reinarman and Murphy, 1991). It may take up to ten years from first use to dependent use, though progression appears to be faster with stimulants like cocaine and amphetamines (Gerstein and Harwood, 1990). Much of the literature on the early phases of

the drug use(r) career can be found in the studies of adolescent and young adult drug use (Hawkins et al., 1984; Kandel et al., 1986). This body of work provides important predictors of movement from experimentation to chronic use. In adults, researchers have described careers of users in terms of length and relation to other activities like crime. Hanlon and colleagues (1990) found the average career length of a heroin user to be about fifteen years, the average number of periods of use across that career to be about four, and the average period of use to last a little less than two years. The work of Anglin and colleagues (1986) and Simpson and colleagues (1986) report careers of ten or more years duration involving multiple periods of recovery, relapse, and reduced used. A similarly detailed carer model has not been developed for "heavy" users of other drugs, like cocaine or marijuana, but treatment admissions data indicate that persons using these substances also enter treatment multiple times, implying cycles of relapse and recovery analogous to heroin users, though perhaps of differing lengths. For many, these cycles correspond to repeated treatment attempts or multiple incarcerations; for others, they are independent of those events.

In the bibliography which follows we have tried to provide a broad representation of the literature on drug use(r) careers. The lives of the "heavy" drug users have been the subject of literature, drama, and scholarly research for centuries. From De Quincey's classic description of his life as an "opium eater" in the 1820s (Ward, 1966) to William Burroughs' *Junkie*, a graphic narrative of being narcotic addicted in the 20th century, the nature of drug dependence has been dramatically drawn as a consuming and often life-defining struggle in which reality, myth, and stereotype are interchangeable.

Scholars of addiction describe the following *career* characteristics of drug use:

- Progression of amount of use
- A process of increased involvement in its use and the lifestyle surrounding its use
- The intertwining of drugs with all aspects of the user's life

Some have tried to capture the complex events of a substance use career through user histories or in detailed psychosocial data on users (Dai, 1937; Chein et al., 1964). Others have described the lives of small samples of users and the processes involved in the drug career (Becker, 1963; Waldorf, 1973; Biernacki, 1986), often drawing on the techniques of ethnography (Preble and Casey, 1969; Waldorf, 1973; Agar, 1973). Recent work continues these traditions in the large body of drug ethnography (Waldorf et al., 1991; Williams, 1989) and epidemiological and survey work (Chaiken and Chaiken, 1982; Anglin and Speckert, 1986; Johnson et al., 1985; Wish and Johnson, 1986).

This literature also reflects the methodological problems which challenge research into drug use(r) careers. Samples are often small or have an unknown relationship to the population of users as a whole. They often rely on cross-sectional data or data linked to certain types of events (treatment, incarceration) in the life of the user (Hubbard et al., 1989). They have also tended to focus on narcotic users (and primarily male narcotic users), leaving enormous gaps in our knowledge about the careers of other types of users.

However, one consistent finding throughout many decades of addiction research is the *dynamic nature* of substance use. Unfortunately, few research designs or data collection tools easily accommodate career analysis. A great deal of research has employed designs which collect information at intervals spanning months or even years, and ask about drug use or crime activity during a period prior to each point (30 days, 6 months, etc.). Other approaches have included archival tracking of users over time, a tactic which falls prey to the underreporting of rates of commission of crimes related to drugs and which fails to detail drug use itself except as reflected in treatment admissions. While these data are important in helping to characterize the activity of users at a specific point in time, they do not accurately reflect the nature of "heavy" drug use. This is not an easy task. Some notable attempts to deal with these problems can be found in the work of Nurco and colleagues (1981, 1988) in the development of timelines for the lives of heroin addicts and the work of Anglin and colleagues (1986, 1993) in their body of work which follows drug users over decades. Current work by the author and colleagues (Simeone et al., 1995) also attempts to grapple with some of the methodological issues in a study which collects data from a systematic sample of 2,000 "hardcore" substance users using a life history calendar of the career. This instrument is based on the earlier work cited above and applications in other contexts (Freedman et al., 1988; Furstenberg et al., 1987).

The bibliography which follows cites only some of the important work on drug use careers. It is divided into two general headings: research which describes drug use(r) careers and methodological issues in studying drug use(r) careers. This is a rich and interesting body of literature, ranging from classic narratives of the lives of drug users to discussions of the problems of trying to characterize accurately or to follow complex lives over time. Because this literature is vast and space is limited, it is only a partial list, and the author apologizes in advance for overlooking much important and interesting work.

Editors Note.

Readers are invited to send additional relevant references to the author and to the editor of *Substance Use & Misuse*. Such references will be published in the future.

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FAILURE AND DRUG USE INTERVENTION

What Happened to Street Kids? An Analysis of the Mexican Experience

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ABSTRACT

This paper documents some possible reasons of failure of programs for street children in Mexico, and provides background information on demographic and socioeconomic trends that underlay self-employment as well as a historical perspective of the social context of street children. It also describes the strategies used to survive in the streets, trends in drug use/misuse, the felt needs of children and the social responses to this problem. It documents how underlying failure there are unrealistic goals, a fragmented perception of the problem and consequently, a fragmented response to it. It also refers to the great pressure on institutions for results, lack of continuity of the programs and disregard of the perception and felt needs of working children who should benefit from these programs.

Key words. Street children; Drug use/misuse; Policies failure; Mexico

INTRODUCTION

The economic crises in Mexico have created an increase in the number of children and adolescents that contribute to the family income by working in the streets. This phenomenon is not new. In Mexico, this has been documented since the 16th century. Nonetheless, today it has become a growing concern

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of authorities and researchers in many developed and developing countries, as reflected by the increasing number of studies and programs related to it (Caudillo et al., 1982; COMEXANI; 1994; De la Garza et al., 1983; DDF, 1992; Gigengak, 1992, 1993; Glauser, 1990; Gutiérrez and Vega, 1994, 1995, 1996; Gutiérrez et al., 1992, 1993, 1994; Vega and Gutiérrez, 1995a, 1995b; Leal et al., 1978; Leal and Pacheco, 1988; Luchini, 1993; Medina-Mora et al., 1982), although the positive outcomes of the different proposals are not equally represented.

The purpose of this paper is to analyze the Mexican experience. We will provide evidence that documents how underlying the "failure" of the programs undertaken in Mexico there have been difficulties and inaccurate definitions of the phenomenon of street children as well as a failure to establish the characteristics of the welfare organizations that deal with the problem, their timing, needs, and interests, as well as the limitations in their policies.

We also intend to analyze the problem from the scope of the transitions of the phenomenon, of the institutions and organizations, and of the official conceptions and policies, as well as to reconsider some successful outcomes.

The data contained in this paper are based on the research programs of the Mexican Institute of Psychiatry over the past 20 years (Ayala et al., 1981; Caudillo et al., 1982; De la Garza et al. 1983; Gutiérrez and Vega, 1994, 1995, 1996; Leal et al., 1978; Mata, 1984; Medina-Mora et al., 1982; Ortiz et al., 1988; Vega and Gutiérrez, 1995a, 1995b). Reference is also made to other studies and reports from institutions and authors working in this field.

DEMOGRAPHIC AND SOCIOECONOMIC BACKGROUND

Mexico is a highly populated country with 81 million people, and of these, 8 million live in the capital city. It is also a country of young people; 39% of the population is under 15 years of age, and in spite of the reduction of the fertility rate from 6.5 children per woman in 1950 to 3.4 in 1990, the growth rate of this age group is still important. It is estimated that by the year 2000 there will be 36,449,000 Mexicans younger than 15 years of age. On the other hand, mortality has diminished since the 1940s but only after 1980 did the fertility rates begin to decrease. Thus, demographic growth will continue well into the next century (CENSO, 1990; Frenk et al., 1994).

The reduction of the fertility rate has not been equal for all sectors of the population, being considerably higher among the poorest and uneducated. According to the population census of 1990, the average number of alive children of females that had achieved secondary education (7 to 9 years of school completed) was 1 as compared to 3.6 when the mother had not finished el-

ementary schooling, and 4.9 for those with no formal education (CENSO, 1990).

On the other hand, the growth of the internal gross product is not equal to the growth of the population that demands satisfaction of basic needs such as education, working opportunities, housing facilities, and a good quality of life.

During the 1980s, the Mexican government set as a priority the reduction of the government expenditures by closing some State institutions and reducing the budgets of remaining ones as well as the number of public employees. Furthermore, the funding of welfare programs for social development were also reduced or cancelled. Public expenditure dropped from 3.1% in 1971 to 1.1% in 1987, and in the education sector the budget was reduced from 16.9% to 10.6% during the same period (Gutiérrez, 1991). Although in the present economic crisis neither budgets were reduced, inflation has decreased the availability of resources in real terms.

Ever since 1976, but increasingly since 1982, the population has experienced an economic crisis. From 1982 to 1987 the per capita gross domestic product decreased by 10.4% in real terms and after a brief period of economic recovery, it is estimated that during this year there will be a new decline. The buying capacity of the currency has also been reduced considerably, with an inflation rate that reached 150% in the eighties, and although in the early 1990s it diminished (Selby et al., 1990), it has grown 50% during the last 2 months. There has also been an increase of unemployment, of 2,000,000 persons in the last year. In 1995 the GNP decreased by 6%.

Under these circumstances, poor families implement different survival strategies, including among others, the reinstallation of extended families that share the same living quarters, responsibilities, and expenses; the incorporation of all the eligible members of the family to the work force, including adolescents and children, mainly in the informal work sector, that requires less investment, greater use of manpower and a lower educational level (Selby et al., 1990; Gutiérrez, 1991).

Consequently, in view of the demographic and socioeconomic situation of Mexico, it is unreasonable to suppose that there are possibilities to end the problem of street children. No matter how unreasonable it may seem to you, the reader, children need to work to make their own living, and even support adult members of their family. This is a reality, and the trend is on the increase. Thus, intervention programs should take this into account and modify their goals. A realistic and achievable approach cannot aim toward a total removal of children from the streets, but it can and should be one of *risk or harm reduction* for them as well as to encourage their greater self-rule independence.

THE SOCIAL CONTEXT OF STREET CHILDREN

The fact that street children make their living and survive in the streets has been acknowledged and documented since colonial times in Mexico. Public perception, attitudes, and thus the social response to the problem has varied, being modeled by culture, ideology, social position, and by the special conception of the problem, its origins and consequences.

During the colonial period the Spanish did see the children, but not the street, and they were viewed by some as "abandoned children," "innocent victims of the sin of others," while the powerful sectors called them *mestizos* (born from Spanish and Indian) in a derogatory way, meaning a "degraded race" (Torres, 1990; Gonzalbo, 1990). The social response was to protect them in houses where religious and secular education was provided; the minors in turn fulfilled a social function as disseminators of religious principles among other children or by performing as "criers" in burial ceremonies (Gonzalez, 1985).

This view rapidly changed, and by 1554 they were considered "badly inclined," and thus the policy was directed to the need to correct the "wrong behavior" (Gonzalbo, 1990).

By the end of the 18th century the children were not only seen as "abandoned by their parents" but also as "disperse children abandoned to vice," labeled as truants, beggars, and lazy (Comision Nacional de Derechos Humanos, 1977).

In the 19th century the view of the elite was widened, focusing on the children as well as on the environment. By the second half of the century the first panoramic view emerged, putting these children in the middle of the great urban scenario, the street.

These children were called paper boys, beggars, and street totters. Although some sectors viewed them with merciful eyes, they were also considered as being harmful because they contaminated the environment and caused epidemics due to their untidiness and filthiness. The response was to segregate them. They were removed from the streets and housed in special facilities. Their health needs were not necessarily taken care of, as the statistical information available shows a high incidence of mortality within these facilities (Gonzalez, 1985).

At the beginning of the 20th century the street appeared as an important "actor," being considered to be a corruptor of children, who were viewed as predelinquent or as juvenile delinquents, and thus were taken to court (Azaola, 1990). By mid-century, street minors were dramatically associated with drugs (mainly alcohol and marijuana) (Alvarado, 1950). Gonzalez (1985) reproduces a newspaper article from 1952 "2,500 begging children are given alcohol and

drugs so they may carry out their work." While some sectors considered them as victims of vice, others viewed them to be antisocial, and still others referred to them as "children of unmarried women, prostitutes or children of alcoholics" (Lopez, 1990). Minors were incarcerated in correctional institutions because drug use was considered a deviation (Azaola, 1990).

These views were those of the powerful, not those of the children. Although they usually gave only a cursory glance at the children, their opinion aroused rejection, fear, pity and guilt, and a social response of either welfare or repressive actions.

In these opinions we do not hear the voice of the children themselves; we do not know who they say they are, what they think, feel, or do. The current perspectives of policymakers regarding children using public spaces for survival does not include the viewpoint of children regarding themselves and their situation.

This representation agrees with what Ardener (1977) has defined as "mute phenomena," not providing the information needed to understand these children as part of a cultural and social reality.

Furthermore, the various categorizations are too restricted and are unable to include what is in fact a dynamic phenomenon. Consequently, policymakers make decisions based on an arbitrary knowledge of the reality that the children live.

The perception of children by agencies that deal with the problem—governmental and nongovernmental—varies according to their specific origins and goals. Their labels go from "minor delinquents and drug addicts," "unloved children," to "heroes," defined by some as "Spartan warriors" or "race of steel and crystal" (Gingengak, 1993). No matter how they are viewed, they are better equipped for survival, being the more evolved group of the marginal sector.

The confusion in the categories is also present in the given numbers of children that survive in these conditions. For some they are thousands, and for others they are only a small number that can be approached by integrated programs.

It has been estimated that the minors incorporated in the labor market in Mexico City represent 20% of the informal market sector. The last census (1990) identified 14,758 working children between 12 and 14 years of age (2.8% of the total group of that age living in Mexico City). At the time of the census, 1,882 were unemployed (COMEXANI, 1995).

On the other hand, of a total of 241,000 adolescents between 15 and 19 years of age, 24% were employed. Some children and adolescents, estimated to be more than 11,000 (DDF, 1992), looked for sources of income in the streets, and in some cases they left their families and lived in the streets.

In order to organize activities, governmental programs have categorized these minors into two distinct groups: "children of the street," defined as those who have already broken with the family and temporarily or permanently sleep in the street, and "children in the street," namely those who continue to live with their families while working in the street (DDF, 1992).

Several studies suggest that these definitions may be inaccurate, as the process that takes some children from working in the streets to the abandonement of the family is usually gradual (Leal et al., 1978).

The place where these minors spend the night is a less accurate distinction of family relations than the destiny of their income (Medina-Mora et al., 1982). Other studies document how some children spend the night in public places without having broken ties with their families, while still others return home to sleep without interacting with responsible adults (Glauser, 1990; Luchini, 1990).

Gutiérrez and Vega (1994, 1995) and Gigengak (1993) studied these phenomena from the perspective of the children. According to them, most children considered themselves individually as children of the street as well as children in the street in different degrees. Some rejected both categories, and others did not care. These authors also found that individually many children refer to themselves as children of the street when they talk to adults, but they do not identify with this general label. Rather, they identify more concretely with the place where they gather around or live, and do not consider themselves to be "victims" nor "antisocial beings." Some are even proud of "belonging to the street" because they have survived against adversity.

WORKING CHILDREN, SURVIVAL STRATEGIES, DRUG USE, AND RELATION TO INSTITUTIONS

Working Children

There are several factors that condition the incorporation of children and adolescents into the informal sector of the economy. On the other hand, there is a scarcity of job opportunities in the formal sector, with increasing unemployment, and there are no formal strategies for the generation of job positions for minors under 14 years of age. Also, the automatization achieved in industry makes it unnecessary to hire minors, and even costly.

On the other hand, labor regulations prohibit the employment of minors under 14 years of age and establishes for those between 14 an 16 years of age a maximum workday of 6 hours, divided into two shifts of 3 hours each. They also forbid their employment in unhealthy or dangerous activities, including establishments where alcoholic beverages are sold, ambulatory work (except when authorized by labor inspectors), extraordinary evening work, any labor

after 10 p.m., and in general those activities that may limit their normal development.

There is also the requirement of having finished elementary schooling (6 years after preschool), unless the authorities consider that there is no incompatibility between working and attending school. Minors between 14 and 16 years of age also need the authorization of parents or others if the parents are absent, and a medical certificate. Those between ages 16 and 18 may be freely hired, except for nightly industrial activities.

The requirement of having a certificate of elementary school attendance limits the job opportunities for minors who have been expelled from school or made to drop out for economic reasons. The reality is that some families lack the necessary resources to maintain their children in school. Although education is free, they need money for transportation, clothing, etc. And in many cases, if children attend school they have less time to work and thus contribute less to the family income.

Although minors are protected by regulations, they nevertheless work in informal activities not subject to legal enforcement, such as servants to well-to-do families, mechanics, servers, packers and carriers in supermarkets, trash collectors, etc., and they are sometimes illegally hired in the construction business and other activities of the formal sector.

Whether the law should be modified to allow children to work in organizations where s/he can be protected is a matter of strong debate. Underlying the need of children to work are economic and social problems that go beyond labor regulations. Children should not be forced to work to survive, but the reality is that they are, and those who adapt to street life are strongly attracted to the freedom that street conditions offer.

In fact, labor experts in Latin America have been paying more attention to the practical issues of protecting minors while they are working, developing mechanisms that guarantee the best opportunities for physical, mental, and social development (Bequele and Boyden, 1990; Meyers, 1991).

There is a general lack of information about the labor, economic, and social status of children and adolescents who work, as well their health and physical conditions. Although they are the responsibility of the health, education, and labor sectors of the government, there are few actions undertaken to gain knowledge and intervene in favor of these children. Furthermore, research by individuals or institutions has not been carried out systematically. Consequently, the data available are fragmented and sometimes unknown by decision makers.

A more comprehensive statistical study of working children in Mexico City was conducted with a sample of children working in or using the streets as gathering places. This research included as a universe for study: 1) Primary

meeting places for minors working or living in the streets, usually used during conventional hours (weekdays, daytime); 2) sunday spots; 3) night spots where children gather, work, or sleep—children living in the street are usually found here (n = 11,172); 4) sleeping places: children whose main residence is the street are found in certain streets, bus stops, parking lots, and vacant lots.

Once the places to be studied were established, 13 sampling points were defined according to the type of activity and children to be found. Special observation routes were determined based on the density of minors found in each sampling slot. One hundred and three such routes and 515 meeting places were studied. The coordinators of the study assumed a 3% or error or duplication in the identification of the children. Seven hundred thirty-nine out of 11,172 children identified were selected at random to be interviewed.

This study identified a total of 11,172 children under 17 years of age, with an average age of 13 years. One thousand twenty of them lived in the streets, while the rest worked in it. Seventy-two percent were males, among whom the greatest proportion were between 14 and 17 years of age, while among females the predominant group was between 13 and 14 years of age (34%).

Their main activity was related to commerce, mainly ambulatory (73%), and services (12%), 4% were performers (jugglers, fire-eaters, etc.) and 3% were beggars. A larger proportion of females sold products (88% as compared to 61% among males), certain activities being exclusive to males (e.g., shoe shiners and assistants in graveyards).

Young children were more frequently performers (76% among those between 11 and 15 years of age). Older children more frequently had fixed places for selling products (60% were between 14 and 16 yeras of age). In more than 90% of the cases the family depended in various degrees on the money earned by these children. Sixty percent had worked 3 or more years in the streets, and half of those who lived in the street (53%) had not worked in it before.

Sixteen percent did not know how to read or write; 63% had dropped out of school mostly because of a lack of economic resources (33%) and low motivation (33%). Five percent had flunked out, 10% had been expelled from school, and 10% had never attended school.

Fifty-seven percent worked more than 6 hours and 29% worked between 9 and 13 hours. Thirty-seven percent had two meals per day and 5% only one; they usually bought "junk food" in the street and their main health problems were respiratory (64%) or gastrointestinal (21%).

A study conducted 1 year later by a nongovernmental organization [Educacíón con el Niño de la Calle ("Education with the Street Kid") (EDNICA), 1993] identified 3,941 children who worked in the streets in 155 areas of Mexico City. Eighty-one percent were males and 19% females; 19%

lived in the street, 29% worked in the streets with a family member, and 52% worked by themselves. Forty-one percent survived through informal commerce, and 26% were beggars. This study reinforced the findings of the 1990 census, and focused attention in a group of minors working with their families in the streets, usually not mentioned as part of the group taken under consideration by organizations that deal with the problem.

Projects that have been more closely studied children living in the street report their poor qualitity of life. For instance, a study conducted by Peralta (1990) among 40 children (average age of 13 years, 83% males, 67% having migrated from localities outside of Mexico City) reported that 33% had both their parents but had barely any contact with them. Seventy percent had experienced physical abuse by one or both parents prior to leaving their home, and 44% reported having been abused in the streets.

None attended school, they usually worked until very late at night, and most of them had a history of illegal activities such as stealing and drug use. One-fourth had been arrested by the police, and their occupational aspirations were quite limited.

These studies also reveal an increasing number of females working in the streets without their families. Although previous reports mention the presence of females, they were either few in proportion (Medina-Mora et al., 1982, found only 5% females in their study of southern part of Mexico City) or they were mentioned as part of the street subculture in their role as prostitutes (Leal et al., 1978).

One consequence of this trend is adolescent pregnancy and the creation of families in the streets. The needs of this emerging group are not taken into consideration by institutions dealing with this problem, and thus they tend to separate the families and provide custody for the newborns. Consequently, when the youngsters want to keep their children and live as families, they tend to avoid seeking institutional assistance (Vega and Gutiérrez, 1995a).

Survival Strategies

Leal et al. (1978) described the life of street children living in a highly criminal area. Included in their study were 24 children who had remained in the selected area for 3 continuous months and who used inhalants in varying quantities at least 4 days per week. Their average age was 9 years, 11 months. They originally came from broken homes, and in 17 cases the children lived in single parent homes with the mother. These authors state that the lifestyle of these children was determined by several factors, such as the replacement of home life by the street, habitual use of inhalants, and being in constant tension because of having to avoid the police.

They had no problem finding food or a place to sleep; they begged for money or food, or ate leftovers from tables of eating places. This particular group of children slept during the day and remained awake at night, which was characteristic of the area which consisted of bars, restaurants, and music. It is the typical area of Mexican folk bands, known as "mariachis," that offer their services to tourists and other potential customers, singing in a plaza mostly at night. The children usually sleep in groups in vacant lots, together with dogs that warn them of the possible presence of the police or other people who could steal their money, shoes, or other belongings. They eventually rent a room in a hotel in order to take a bath or to avoid personnel from social welfare institutions who look for children sleeping in the streets in order to take them to "protected houses."

Another striking feature of this lifestyle is that these children form their own family in the street, with a young adult acting as a father and a prostitute as a relevant mother figure in their lives. The male acts as a "valedor," teaching the child the required skills to survive in an aggressive environment, and the female protects and cares for the children, who in turn take care of the small babies when the prostitutes have a customer. There is a strong relationship and devotion between peers; everything is shared.

Studies that have included children who both work and live in the streets in less risky areas in terms of criminality and police involment, document that the living conditions of those who live with their families (67% of the sample) are far better. This suggests that these families, in spite of being poor, manage to provide a caring environment and to send their children to school, protecting them from the life in the streets experienced by other minors with whom the "working" environment is shared (Medina-Mora et al., 1982).

Gutiérrez and Vega (1995) describe how the survival strategies of children and adolescents vary according to their aptitude, physical appearance, age, sex, operating territory, personal character, economic needs, tolerance from others already established in the area, and from authorities.

Some minors, boys and a lower proportion of girls, work in the main streets and avenues washing car windshields or watching cars. Others, predominantly young females, are in charge of selling shoes from street stalls. Older boys may perform as fire-eaters while girls collect money from car drivers who are stopped at red traffic lights.

Minors also ask for money or food, or steal food and goods, to solve their basic needs and desires. Younger children beg from known and unknown people, inspiring pity. These types of activities are not accesible to older youths who are or look as if they are 18 years of age or older. These groups ask for money only from their friends (Gutiérrez and Vega, 1995).

However, no matter what type of activities they may have carried out for many years, in some cases up to 10 years, at some point, as they grow older,

these stop being functional, because the children start to be considered as delinquents more than being in need of protection. They are not offered the minor jobs that younger ones can perform, such as disposal of trash or carrying/delivering objects or merchandise in exchange for food or money (Leal et al., 1978).

Gutiérrez and Vega (1995) and Gigengak (1992) observed that although minors steal, it is not their more frequent activity as a means of survival. Although prostitution occurs, it is even less frequent than robbery, and it is usually located in well-defined sectors of the city.

Children are usually initiated into sexual activities by homosexual adults, and may later continue on their own. Some adolescents and mainly young females are more frequently involved in prostitution, with some having a history of abuse while living with their families, and some are initiated into prostitution while living in the streets. The majority have reported being sexually abused. Although such abuse may have been done by males in their own groups, it was more frequently done by the police or unknown adults (Vega and Gutiérrez, 1995a).

Having reached adulthood (19 to 30 years of age), they no longer gather in gangs. While most "street" adults have a history of robbery or offenses against health (drug traffic and/or drug use, prostitution, corruption of minors, alcohol and inhalants use), they usually make their living from selling or as fire-eaters (Gutiérrez et al., 1994). It is common for this group to use alcohol to excess. Some of these adults have created families, and they try to keep a private life away from the "street" group by looking for hotels. These adults "street survivors" spend most of their lives moving between jail and their group of friends.

Working Children and Drug Use

In the process of working in the streets, children get involved in the drug "subculture." Some drop out of school and leave their family homes. Surveys conducted among children younger than 18 years of age, working in the streets of Mexico City, report a high prevalence of drug use (Medina-Mora et al., 1982).

Twenty-seven percent of minors working in a sector in the southern part of the capital city who were interviewed reported ever use and 22% daily use of solvents; ever use of marijuana was reported by 10% and daily use by 1.5%. Alcohol (2%) and tobacco (37%) were consumed daily (Medina-Mora et al., 1982).

De la Garza et al. (1983) replicated this study in Monterrey, and found that the incidence of drug use among minors working in the streets was quite low. This was related to the social control by the informal commerce sector

through the type of children that they allowed in the streets. Products such as newspapers, candies, chewing gum, and others were only provided to children attending school and living with their families. On the other hand, a high proportion of solvent users was found in marginal communities (De la Garza et al., 1978).

A study coordinated by the government of the City of Mexico (DDF, 1992) reported that 22% of the minors working in the street interviewed admitting having friends that used marijuana or pills, 8.5% said they used these type of drugs, 14.7% inhaled solvents, and the total rate of users was 23.2%. This study identified a greater number of females working in the streets than what was observed in a previous study (Medina-Mora et al., 1982).

On the other hand, a study among a representative sample of students between 10 and 19 years of age attending secondary school reported a rate of 8% for the use of drugs other than tobacco and alcohol, and the rate of solvents' use was slightly lower (Medina-Mora et al., 1993a).

More recent observations have documented the use of cocaine by street children, which coincides with a trend toward the increase in the use of this substance observed among students (Castro et al., 1986; Rojas et al., in press) and among cases detected through an information system functioning in 44 health and justice institutions in Mexico City since 1986 (Ortiz et al., 1994).

The results from follow-up studies (Ortiz et al., 1988) showed that this practice is usually abandoned upon reaching an average of 18 years of age. A few users shift to marijuana and the vast majority to alcohol (Leal et al., 1978).

In Mexico, dropping out of school, lack of contact with the family, early initiation to street work, drug use among brothers and peers, and migration from rural to urban areas are strong predictors of drug use. Through a multiple correlation analysis, these variables ($R^2 = 42$) strongly differentiated drug users from nondrug users working in the streets (Medina-Mora et al., 1982).

Studies conducted among these sector of the population document how the lives of these street children and the patterns of drug use, although sharing some characteristics, vary according to the environment; that is, the presence of police, the degree of criminality, etc. (Leal et al., 1978; Medina-Mora et al., 1982; Gutiérrez et al., 1992).

Leal et al. (1978), in their description of the life of children living in a highly criminal area, recounted how inhalant use was the central issue in their lives, that all their activities were directed to obtaining or using solvents, and that they usually remained intoxicated all day. Other authors have studied "street" groups with a lesser degree of drug involvement (Medina-Mora et al., 1982; DDF, 1992; Gutiérrez and Vega, 1995).

The use of inhalants is a more common practice among children who work in the streets than it is among those who are students. In a study conducted

at the beginning of the 1980s, 27 and 4%, respectively, had experimented with inhalants (Medina-Mora et al., 1982). Ten years later the rates reported were 14.7 and 3.5%, respectively (DDF, 1992; Medina-Mora et al., 1993b).

However, among some children who could be categorized as being "poor" or "marginal," only one out of every three has been involved in drug use. School attendance, later beginning of work, family contact, and the fact that brothers and friends did not consume drugs may have acted as a resistance factor in these instances (Medina-Mora et al., 1982).

Children refer to their drug use as their "vice." In some areas they prefer toluene over glue because it is considered to be less damaging to their health (Gutiérrez et al., 1995c) and causes a less severe hangover (Leal et al., 1978). The latter author found that although pure toluene could be found in the area where he worked (because it was used there by the leading industry), it was not readily available to the children. This created a small traffic, usually by older boys (over 18 years of age), who bought it, and the children distributed it. Among group members, the inhalants are shared and never sold to people outside the group (Leal et al., 1978).

The type of substance used, as well as the paraphernalia they carry with them, depends very much on the place where they do their inhaling. While in the streets, formal responses to programs of police activity and informal reactions such as avoidance and rejection are the determinant factors. In these cases, minors develop various techniques that enable a more discrete use of drugs including: 1aconsuming liquid solvents that do not leave spots on their faces, b) carrying small bottles hidden in their clothes, and c) dampening the sleeves of their clothes and then lifting the sleeve to their faces (Leal et al., 1978). Also, children have been seen using absorbent paper or a cloth wet from thinner or toluene (*mona*) which can be hidden in the hand and thrown away when necessary (Gutiérrez and Vega, 1995).

Glue paste (*chemo*) is usually kept in cans or plastic bottles that can be disguised as refreshment, and its effect can be more easily controlled. Plastic bags are less frequently used (Gutiérrez et al., 1994).

In areas with less police involvement, children may carry small bottles with glue and may have visible spots on their faces as a result of inhalation (Medina-Mora et al., 1982). A recent study undertaken with eight females (half living permanently in the street with a gang, the other half spending the night with family, friends, or institutions) reflected a specific pattern of inhalation determined by a sense of public rejection related to their gender. In private places, away from the eye of the public, they felt they could inhale and relax safely (Vega and Gutiérrez, 1995a; Goffman, 1959).

It is often difficult to determine the exact substance that children are using, since, for example, thinner is uusually sold in small shops by the liter

mixed with various components including ethanol and even benzene. A mixture of toluene with white gasoline has also been reported (Gutiérrez and Vega, 1995).

Minors use solvents for multiple reasons, all of them conditioned by their poverty. Many children inhale toluene before going to sleep in order to avoid feeling cold while sleeping on the floor or while hungry, bored, sad, or fearful of street and police violence (Leal et al., 1977; Gutiérrez et al., 1995). In these cases minors report perceptual distortions that may result in a joyful feeling that helps them forget their problems or calms them (Gutiérrez and Vega, 1995).

Furthermore, inhalants may enhance a magic experience or satisfy some desires (like having a meal in a restaurant, diving in the sea), or they may experience terror of the presence of the devil or death (De la Garza et al., 1977; Azaola, 1993).

Some minors pretend to be able to control their "trip" while others loose control. Glue paste (*chemo*), for example, makes them violent under certain circumstances. While intoxicated, children might get confused and drink the solvent. They stop inhaling when they have to concentrate on certain activities such as reading, working, chatting, or begging for money.

Some other authors have found a low consciousness of their problem and, except when they have a severe hangover, they do not think of asking for help (Ortiz et al., 1988).

Street Children and Institutions

The first documented programs for children working in the streets, which included as a concern the prevention of inhalation of substances, are from the early 1970s when the Mexican Center of Studies of Drug Abuse (CEMEF) (Leal et al., 1978) conducted a longitudinal study of minors who live in the streets ("from the street") in a sector of Mexico City traditionally known for its high degree of violence and delinquency.

The research included a component of treatment evaluation coordinated by a treatment national organization, the Centros de Integracion Juvenil (Centers of Juvenile Integration) (CIJ), based on principles of "self-determination" and token economy; that is, children were motivated to stop inhaling vapors and to use their income to improve their living conditions.

In the mid-1970s the government of Mexico City implemented a program that included a special house for children (both "in the street" and "from the street") who had no history of being detected by police or welfare officers in the street. This program considered that these children could be rehabilitated before becoming part of the street subculture, and that to place them in the existing "protecting houses" would expose them to the street culture.

An evaluation of children living in the two types of houses showed that they differed in many aspects, the inhalation of substances being a major difference. Only 37% of the first group of minors had the habit in contrast with 75% of the children living in "protecting houses" (Caudillo, 1982).

Other research protocols undertaken by the Mexican Center of Studies on Farmacodependency (CEMEF) and later by the Mexican Institute of Psychiatry in collaboration with the National Autonomous University of Mexico (UNAM) evaluated residential and nonresidential treatment alternatives for inhalers, based on the social learning theory (Ayala et al., 1981; Mata, 1984). Although these programs proved an adequate level of efficacy, they have not been used by other institutions nor are they known by people who may benefit from them.

Nongovernmental welfare institutions made their appearance in Latin America in the 1980s. During previous decades there were a few, political in nature, as reflected by their activity in aiding groups with political interests to enhance their ability of self-rule (Arellano-López, 1990).

As a result of the economic crisis of the 1980s in Mexico, government expenditure was reduced, and social and welfare activities were among the most affected. It soon became apparent that since the government was incapable of adequately attending to social demands, it was much more affordable for it to support nongovernment organizations (NGOs).

After the International Year of the Child in 1979 and reinforced by the 1990 meeting held in New York City, international funds were made available. Along with the increased budget, NGOs were pressured to increase their administrative skills to justify the use of funds for the number of children involved. Thus, a fight for minors started among the different competing organizations. Some NGOs that could not meet these demands disappeared.

As a result of the increased availability of funds, some NGOs lost their initial attributes, this is, they could no longer (a) work with children who remained in the streets, (b) work on a "person-to-person" basis, and (c) have the flexibility needed to solve immediate problems, among other effects (Arellano-López, 1990). When NGOs became candidates for obtaining funds, they also became subject to financial control and were forced to collect information and submit reports to the funding agencies; they became more similar to governmental agencies. For example, both NGOs and GOs share problems in the coordination of activities to reach their presumed beneficiaries.

Subsequently, at the time of ingress of Mexico to the North America Free Trade Agreement (NAFTA) and to the Organization for Economic Cooperation and Development (OECD), there was an assumption that Mexico was a rich country. International funds were withdrawn, and the internal economic crisis made funds even more unavailable. Under these circumstances, NGOs

have been forced to cutback on such social programs as vocational training and to only help in providing the basic needs of housing, food, and clothing.

Through the ongoing WHO intervention project with street children, it has become clear to researchers that the decrease of outdoor work and social support to street children traditionally provided by NGOs due to the economic crisis has forced the organizations to reduce their number of street educators. The few left are overburdened with administrative obligations and with the task of maintaining a fixed quota of children sleeping in the protection houses.

Many NGOs have a religious origin and can be characterized as "closed door institutions." Some of them provide sites where they offer food and care for children on a nonresidential basis.

In spite of the fact that institutionalization has been the traditional response to this problem, new alternatives have emerged since the 1980s, including a humanization of the segregation problems and a better understanding of the needs of street children. The outcome of this approach is a new type of program called "open door institutions." The role of international organizations such as UNICEF, ILO, CHILD HOPE, and RADA BARNER has been of major importance.

These programs have houses which offer children places where they can go to eat, sleep, and participate in recreational activities,. Children can go in and out as they wish, but they must observe some rules such as the time when they must return, no fights, and no inhalation or ingestion of drugs inside the premises. As a result of these policies, some children return to the institutions just a few time. Some of the ones who stay increase their use of tobacco and become irritable and anxious. If, for one reason or the other, they inhale again, they experience shame and guilt for betraying the institution and leave (Gutiérrez and Vega, 1995).

Furthermore, some institutions have contributed staff known as "street educators" who interact with the children in their working and living places, and who gradually convince the children to get involved in their programs. These "street educators" include social workers, psychologists, people with university educations in the social sciences, and a few medical doctors.

In 1992 a University Diploma was confered to a group of 300 persons who work for "open door institutions" on behalf of both GOs and NGOs. They implement programs for the social development of the children, helping them to return to their families when desired, referring them to health institutions, and helping them to get jobs in the formal sector.

Other peripheral organizations do not pretend that children should abandon the public places, helping them to organize themselves in order to improve their living conditions *in* the streets and encourage their self-rule.

A new perspective has recently been offered by the World Health Organization through the Substance Abuse Program (WHO, 1994). It begins with

a diagnostic assessment of the problem of "substance abuse" among minors and proposes an intervention plan designed not only by experts in the treatment of addictions but also by those sectors that are in contact with street children and by the children themselves. This proposal is very attractive given the reality of the few and poor quality services available for street children when they want to deal with their addiction. It is expected that if minors cooperate in the design of the intervention, the result may be more effective and accepted by children in similar circumstances.

The previously mentioned statistical study conducted by the government of Mexico City in 1992 (N = 11,172, n = 739) reported a low incidence of contact of children with institutions. Only 13% of those interviewed reported having had some contact. Fifty-two percent of those who had any contact also reported some kind of abuse. Reasons for returning to the streets dealt with feelings of incarceration (25%) and of boredom (17%).

On the other hand, Gutiérrez and Vega (1995) and Gigengak (1993) found that children were well acquainted with programs and institutions for street children. For instance, by interviewing 25 children, Gutiérrez et al. (1995) obtained the names of five different agencies, although very few of the children had contacted public health services.

The difference between the data of the census of the government of the city (DDF, 1992) and the above-mentioned studies reflects the basic orientation of the NOGs to attend only to the so-called "street children" and not to all the working children.

Regarding the social perception of health and welfare personnel dealing with these minors as opposed to the perception, characteristics, living conditions, and needs of children, Gutiérrez et al. (1993) and Gutiérrez and Vega (1995) documented this issue. In their interviews with personnel (1995) they reported that their perception is usually inaccurate, with a high degree of prejudice and a lack of understanding of youth's needs and values.

POSSIBLE REASONS FOR FAILURE

The activities that children and adolescents perform in the streets fulfill social functions which represent benefits not only to their families but also to others. Street children provide services such as delivering goods to conductors in the middle of the traffic, watching or cleaning cars in public places, etc. They are even used in political activities such as demonstrations, and their existence justifies the employment of educators, researchers, and journalists.

Even though there is general agreement in disapproving the inclusion of children in the labor force, the great majority of the institutions that work in favor of childhood have only chosen to target those children who live in the

streets and disregard the children who only work in the streets, thus indirectly preserving the child labor force in the streets.

The work performed by minors is transformed in the public perception and turned into a problem only when those in the elite, who represent the political and economic powers, are affected by the external effects of the work of the poor children. In such situations, collective measures are undertaken in order to lessen the problem, but not necessarily to solve it. The problem of poverty is dealt with by the wealthy by distributing a minimum part of the surplus without modifying the pattern of dependency and exclusion that defines the poor on one side and the rich on the other.

Governmental and nongovernmental organizations acknowledge that all working children are at great risk, but in many programs, according to Glauser (1990), the life, problems, and situations are not experienced, but heard or seen from a distance by individuals or institutions that wish to help the children, or who are mandated to do so.

Many programs operate very individually. Each GO or NGO pays attention to a sector of minors, doing their best to help them, but in a disjointed manner. Their strategies are individual and independent of the actions of other organizations, and children go in and out of them, according to their felt needs, usually not remaining for long periods of times in any of them.

Frequently different organizations work with the same children, competing among them. When they engage in common activities, each organization feels that the "normalization" of a child, defined as a reintegration into the family, working in the formal sector, stopping the inhalation of vapors or stealing, is a result of their own program without taking into account that it is usually the work of different institutions that have impacted the child in different instances.

On the other hand, recently some organizations [such as Educación con el Niño Callejero (Education with the Street Children, EDNICA), Centro Transitorio de Capacitación y Recreación (Temporal Center for Training and Recreation, (CARACOL)] have started to recognize the cumulative effect of multiple interventions, and are making important efforts to fulfill specific demands and felt needs of the children and adolescents while they are in their custody.

Consequently, we may conclude that underlying the failure for effective intervention—both planning and implementation—with drug using and nonusing street children, are we unrealistic and thus reachable goals, a fragmented perception of the problem, and fragmented responses. Furthermore, there is too much pressure on institutions for results, and there is a lack of continuity of programs and actions. Most important, until recently these programs did not include the perception and felt needs of the potential users, the working children. It is only recently that their voices have started to be heard.

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RESUMEN

El trabajo contiene algunas reflexiones sobre los motivos que han llevado al fracaso a los programas para niños de la calle en México, proporciona información antecedente sobre las condiciones sociodemográficas y socioeconómicas que subyacen al autoempleo de menores, una perspectiva histórica y una descripción de las estrategias que utilizan para sobrevivir en las calles y el uso de drogas, discute las necesidades sentidas de los niños y las respuestas sociales a este problema. Documenta como subyacente al fracaso existen metas poco realistas, una percepción fragmentada del problema y por lo tanto de su solución, demasiada presión en las instituciones, falta de continuidad de los programas y falla en considerar las percepciones y necesidades de los menores a quienes se pretende beneficien estos programas.

RÉSUMÉ

L'etude contient quelques reflexions sur les causes qui ont mené à dèchance des programmes pour les enfants de la rue au Mexique, il donne information antécédent sur les conditions sociodémographiques et socioeconomiques qui sous-jacent l'auto emploi des mineurs, une perspective historique, et une description des stratégies qu'ils utilissent pour survivre dans les rues, et l'usage de drogues; il discute les besoins avertis des enfants et les résponses sociaux à ce problème. Il documente comment, sous-jaceant la décheance, il y a des buts peu réalistes, une perspective fragmentaire du problème, et partant de sa solution, des pressions excesives sur les institutions, manque de continuité dans les programmes et faille dans la considération des perceptions et des bésoins des mineurs à qui ces programmes visent beneficier.

THE AUTHORS

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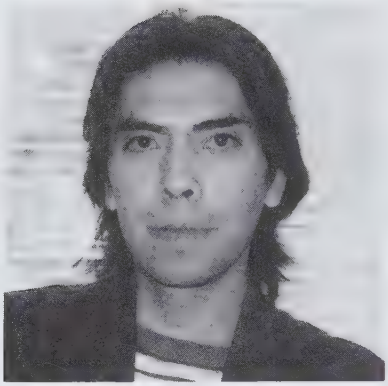

Rafael Gutiérrez and **Leticia Vega** are psychologists and full-time researchers in the Mexican Institute on Psychiatry where they have worked for the last 10 years. Rafael Gutierrez is also studying for a Master Degree in Anthropology, and teaches in the School of Psychology at the National University of Mexico. Since 1990 he has been the chief researcher for the project on children that work in the streets of Mexico City. Leticia Vega collaborates in this project. Before enrolling in this area, they worked in the elaboration and standardization of scales for the evaluation of intellectual development of children from preschool to the elementary level in urban contexts. Later they made psychological and cultural adaptations to these instruments so they could be used in Indian "Nahuas" communities. A new proposal for working with street children developed from their observations. They have presented their research at seminars and acted as teachers in the University Diploma for street educators. Leticia Vega has published 17 articles and Rafael Gutierrez, 20. UNAM has also published 20 of his manuscripts for use in the academic curricula of the School of Psychology. He participated in the WHO PSA meeting on Street Children in 1994 and is in charge of the second stage of the program, testing intervention with the collaboration of Leticia Vega.

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Gender and Substance Use

Gender Differences in Alcohol and Other Drug Use among Young Adults

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ABSTRACT

This article describes gender differences in alcohol and other drug (AOD) use and misuse in a representative sample of young women and men in the United States. Data were drawn from the National Longitudinal Survey of Youth (NLSY) and focus on gender differences in prevalence and patterns of AOD use in African American, Hispanic, and White young adults ages 19 to 24 years old. Findings are summarized and implications for prevention are presented.

Key words. Alcohol; Drugs; Gender differences; Young adults

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INTRODUCTION

Despite the growing concern about alcohol and other dug use and misuse, relatively little is known about the prevalence or patterns of AOD use in women. Research on women's use of AODs is no longer neglected, but the proportion of research focusing on women is considerably smaller than the proportion focusing on men (Clayton et al., 1986; Hughes, 1988; Lex, 1991). Most studies on women's use of AODs have focused on a single drug or drug class, usually alcohol, heroin or other opiates, or psychotherapeutic drugs. Most epidemiologic studies have used samples drawn from psychiatric or drug and alcohol user treatment facilities or from school-based populations. The few general population studies have, for the most part, concentrated on alcohol use and misuse (e.g., Wilsnack et al., 1986), and have seldom included representative numbers of women from racial/ethnic minorities. Finally, researchers have often studied women and men separately or have combined data on the two, apparently assuming that factors related to AOD use are the same for women and men (Hughes, 1990; Vanicelli and Nash, 1984). Much more can be learned by exploring similarities and differences in women and men than in studying either one separately, or assuming they are the same. By comparing women and men, important information that might otherwise be lost can be used to inform drug-use-related research, clinical practice, and policy.

In this paper we examine gender differences in AOD use using a large, nationally representative sample of young women and men in the United States to determine the generalizability of, and extend, reported findings based on more limited samples.

GENDER DIFFERENCES IN ALCOHOL AND OTHER DRUG USE

Because of the above limitations we know considerably less about AOD use in women than in men. Nevertheless, available studies report some relatively consistent findings related to gender differences in prevalence rates and patterns of AOD use. Among the most widely reported is men's higher rates of use of most licit and illicit drugs. For example, more men than women drink, drink "heavily," and experience alcohol-use-related problems. Men are more likely to use most illicit drugs, and the differences tend to be largest at higher levels of use (Johnston et al., 1993).

Marijuana and cocaine, the most commonly used illicit drugs, are used by substantially greater numbers of men than women. However, it appears that more women than men use nonprescribed stimulants and tranquilizers (Johnston et al., 1993), and substantial numbers of women use tobacco and legal drugs,

such as alcohol and medically prescribed psychotherapeutics (Cooperstock, 1981; Ferrence and Whitehead, 1980; Ogur, 1986; Verbrugge, 1982). Studies indicate that women generally begin AOD use at a later age (Hser et al., 1987) and report less public or social use of AODs (Blankfield, 1989; Blume, 1986; Robbins, 1989).

Multiple drug use appears to be increasingly common, especially among cohorts 18 to 34 years old (United States Department of Health and Human Services [USDHHS], 1993), and there is some evidence that women may be more likely than men to use more than one drug (Blankfield, 1989; Blume, 1986; Celantano et al., 1980). Most evidence for multiple drug use is from studies of clinical populations. Findings from these studies suggest that alcoholic women in treatment have higher rates of use of and dependence on drugs other than alcohol. Earlier studies report that psychoactive prescription drugs, such as minor tranquilizers and sedatives (e.g., Blankfield, 1989), were commonly used by women in alcohol treatment programs. More recent studies suggest that concurrent use of alcohol and illicit drugs may be increasing, especially among younger women (Lex, 1991).

GENDER DIFFERENCES WITHIN RACIAL/ETHNIC GROUPS

Data on AOD use prevalence and patterns in the United States specific to racial/ethnic groups are limited and inconclusive. Rates of use vary not only by age but also by location (e.g., urban, rural). Among student populations there appears to be a relatively consistent prevalence-rate pattern, with Whites reporting the highest rates of use of most licit and illicit drugs and African-Americans reporting the lowest rates. Hispanic (see Note 1) youth generally report rates of use that are lower than, but more similar to, Whites than African-Americans (Newcomb and Bentler, 1986; Welte and Barnes, 1987). However, when data on different populations and age groups are considered, these patterns do not always hold. For example, the National Household Survey on Drug Abuse (NHSDA) indicates that African-Americans, at least those in some age groups (especially older) and for some prevalence periods (e.g., lifetime, last year, last month), report rates of cocaine and marijuana use that equal or exceed those of Whites and Hispanics (USDHHS, 1993). Gender difference breakdowns by racial/ethnic groups reflect an even less consistent picture. Generally though, males in each of the three racial/ethnic groups report higher rates of use of alcohol, marijuana, and cocaine than do females, and these differences tend to be smallest among the youngest cohorts (ages 12 to 17 years old) (USDHHS, 1993). More data from females in the general population, including those from racial/ethnic minorities, are needed to better understand gender differences in drug-use patterns. One of the most cost-ef-

fective methods of providing this data is secondary data analysis of existing data sets.

METHOD

Source of Data

Our data are from the 1984 survey of the National Longitudinal Study of Labor Market Experiences of Youth (NLSY). Responsibility for the administration of the NLSY has been shared by three separate organizations: the Center for Human Resource Research (CHRR) at Ohio State University; NORC (formerly the National Opinion Research Center) at the University of Chicago; and the United States Bureau of the Census. Detailed information about the design of the survey instruments, sample design, and field work is available from CHRR (CHRR, 1993). Since 1979, data have been collected yearly from a panel of young women and men residing in the United States. In 1978, three independent probability samples, designed to represent the entire population of youth born in the years 1957 through 1964, were drawn for the NLSY. These included 1) a cross-sectional sample designed to be representative of the noninstitutionalized civilian segment of American young people aged 14 to 21 as of January 1, 1979; 2) a supplemental sample designed to oversample civilian Hispanic, African-American, and economically disadvantaged White youth; and 3) a sample of youth aged 17 to 21 serving in the military.

With the exception of persons on active military duty, all sample selection was accomplished through a multistage stratified area probability sample of dwelling units and group quarter units. Data were collected through personal household interviews that averaged about 60 to 90 minutes in length.

The completion rate in the first wave of the survey in 1979 was nearly 90%; the total sample surveyed was 12,686. Retention rate in 1984 was 95% (N = 12,069). For the base-year sample, weighting was adjusted for differing sample rates and differing completion rates among Hispanics, African-Americans, and disadvantaged Whites. Both the sample design and the high rate of retention increase the likelihood that difficult-to-locate groups are more likely included in the NLSY than in other national surveys (Center for Human Resources Research, 1993).

The findings presented here focus on gender differences within race for African-American, Hispanic (see Note 1), and White young adults between the ages of 19 to 26 years old. The "Hispanic" group includes Mexican, Cuban, Puerto Rican, or other Latin American subgroups. Although these subpopulations are diverse and in some cases report different patterns of AOD use (Bachman et al., 1991), small cell sizes in some of the tables suggest that a broad perspective on ethnic differences would be easier to achieve by combin-

ing them into a single analytic group for the purposes of this paper. The 19 to 26 year-old age span is important because it represents an age group believed to be at high risk for AOD use and misuse. Although researchers have reported AOD findings from this data set, relatively little attention has been paid to gender differences in prevalence rates and patterns of AOD use.

MEASURES

The original focus of the NLSY was on the labor market experiences of young men and women in the United States. A number of lifestyle and health-related questions, including those related to AOD use, were added in some waves of data collection. A comprehensive, retrospective battery of questions about alcohol and other drug use, including the medical and nonmedical use of prescription drugs, was included in the 1984 wave of data collection.

Measures for all classes of drugs include lifetime use, past year use, and use in the last 30 days. For alcohol, cigarettes, marijuana, and cocaine, measures also include age at initiation of use, most recent use, and frequency of use (number times used in past 30 days). For illicit drugs other than marijuana, measures include lifetime use, age at initiation of use, and number of times used in lifetime. Use of prescribed drugs (most recent use and frequency of use in past 30 days) was also measured. In this paper we concentrate on measurements of reported lifetime and past month use.

Definition of Variables

Race

Respondents included in our analyses are Hispanic, non-Hispanic Black, and Whites of Euroamerican descent (see Note 2).

Alcohol Use

Respondents were asked the number of days they drank beer, wine, or hard liquor in the past month. Response categories ranged from drinking less than once a year, or never drinking, to drinking every day in the past month. Quantity responses ranged from drinking less than one drink to drinking six or more drinks per occasion. Responses to the frequency and quantity questions for beer, wine, and hard liquor were used to derive a continuous variable representing average number of drinks per day. The average number of drinks per day (Q/F) was then divided by a constant (0.14 times weight in pounds for men and 0.12 times weight in pounds for women). This formula, a modified version of the one used by Johnson (1982), provides a more pre-

cise measure of alcohol consumption by accounting for weight and body composition differences in women and men (see Note 3). Women and men with alcohol consumption levels (ACLs) of 0.04 or higher are classified as "heavy drinkers"; "moderate drinkers" are those whose ACL is between 0.01 and 0.039; and "light drinkers" have ACLs less than 0.01 (Johnson, 1982).

Alcohol Problems and Alcohol Dependency Symptoms

There is general consensus in the literature that women experience fewer problems related to AOD use than do men. However, studies have been criticized for use of measures that are more relevant for men than for women (Hughes, 1990; Hughes and Fox, 1993; Vanicelli and Nash, 1984), and because they do not always take into account women's lower levels of use of alcohol and other drugs. In a study of high school students in New York state, Welte and Barnes (1987) found that although more adolescent males than females in every racial/ethnic group drank, and drank "heavily," when amount of alcohol was controlled, White, Oriental, and Native American females experienced as many alcohol-use-related problems as did their male counterparts. African-American, Hispanic, and West Indian females experienced more problems than did African-American, Hispanic, and West Indian males.

In light of the above findings, we use several measures to assess alcohol-use-related problems. The first measure (alcohol aggression) consists of three items (alpha = .70) (i.e., Have you felt aggressive or cross while drinking? Have you gotten into a heated argument while drinking? and Have you gotten into a fight while drinking?). Although such questions may generally be more appropriate for men than women, Wilsnack and Wilsnack (1991) found that among drinkers at the highest level of consumption (2 ounces of ethanol/day), women equaled or exceeded men on a number of aggression-related drinking problems. The second measure consists of eight items (alpha = .68) that assess alcohol dependency (e.g., Have you ever deliberately tried to cut down or quit drinking, but didn't mange to do so? Have you sometimes gotten high or tight when drinking alone? Have you often taken a drink the first thing when you got up in the morning?). Finally, a measure of "heavy" episodic drinking sums the total number of occasions in the past month that the respondent had six or more drinks.

Other Drugs

Use of cigarettes and other drugs was assessed using a recency and frequency measure of use adapted from a scale used by Mensch and Kandel (1988a). For cigarettes, the nine-category variable included 0 = never used;

1 = smoked, but not in the past year; 2 = smoked 6 to 11 months ago; 3 = smoked 1 to 6 months ago; 4 = smoked in the last 30 days; less than one cigarette per day; 5 = smoked in the last 30 days, one to five cigarettes per day; 6 = smoked in the last 30 days, one-half pack per day; 7 = smoked in the last 30 days, one pack per day; 8 = smoked in the last 30 days, one and one half or more packs per day.

Seven category ordinal recency/frequency scales were created for illicit and prescription drug use (stimulants, barbiturates, tranquilizers, psychedelics, heroin, narcotics, and inhalants). The seven categories for these scales are: 0 = never used; 1 = used but not in the past year; 2 = used 6 to 12 months ago; 3 = used 1 to 5 months ago; 4 = used within the last month, but fewer than five times; 5 = used 6 to 19 days within the last month; 6 = used 20 or more days within the past month.

Multiple Drug Use

A measure of multiple drug use was developed to explore the prevalence rates for the most common combinations of drugs ever used and used in the past month (i.e., alcohol and cigarettes, alcohol and marijuana, alcohol and other illicit drugs, and alcohol and prescription drugs).

RESULTS

Gender Differences in Prevalence Rates

Rates of use for lifetime and past month use for 14 legal and illicit drugs are presented in Table 1. Percentages are presented separately for African-American, Hispanic, and White women and men. Also included in Table 1 are prevalence rates for "heavy use" of alcohol (ACL $\geq$ .04), cigarettes (1/2 pack or more per day), marijuana (6 to 10 times in past month), cocaine (6 to 19 times in past month), and *any* use of illicit drugs other than marijuana and cocaine in the past month. Because of the large number of independent tests performed, a Bonferroni correction was used to minimize the chances of type I error. Because our a priori alpha was set at .05, this correction consisted of dividing .05 by the number tests performed to assess gender differences in the use of various drugs. This resulted in an alpha of .001 being used as the critical value for determining statistical significance.

Alcohol

Most of the subjects report having consumed alcohol at some point in their lives. Gender differences are considerably larger for current (past month) than

Table 1.

Lifetime and 30-Day Prevalence Rates for 14 Drugs by Race and Gender

		Hispanic[b]		African-American		White	
Minimum N[a]		Male (884)	Female (861)	Male (1,464)	Female (1,416)	Male (2,470)	Female (2,371)
Alcohol:	Lifetime	94.7	87.8*	93.7	88.6*	98.1	97.4
	30 days	75.7	52.9*	70.1	49.7*	82.1	70.3*
	Light/moderate drinker	68.9	79.5*	72.6	80.8*	63.7	77.0*
	Heavy drinker	25.9	7.9*	20.7	7.3*	34.1	20.1*
Cigarettes:	Life	81.1	70.6*	82.1	73.9*	84.3	84.6
	30 days	42.3	29.9*	47.5	37.7*	44.2	43.7
	1/2 pack or more	21.9	14.6*	33.5	23.2*	36.6	35.6
Marijuana:	Life	63.6	44.1*	67.4	47.4*	71.5	66.4*
	30 days	22.1	10.8*	28.1	13.4*	25.14	14.6*
	6–19 times	12.4	3.9*	15.9	7.4*	13.8	6.7*
Cocaine:	Life	16.9	11.1*	14.4	6.3*	24.4	16.8*
	30 days	6.6	3.4*	3.5	1.9	5.2	3.5
	6–19 times	2.2	1.4	1.4	0.6	1.2	1.0
Stimulants:	Life	15.8	12.7	9.8	7.4	28.3	25.5
	30 days	3.1	2.3	1.8	1.4	3.7	4.5
Barbiturates:	Life	7.2	4.4	3.7	1.2*	14.7	9.6*
	30 days	0.4	0.3	0.3	0.2	0.7	0.5
Tranquilizers:	Life	5.7	3.4	3.5	2.1	10.8	7.7*
	30 days	0.7	0.5	0.4	0.4	0.6	1.0

Psychedelics:	Life	9.1	5.6	4.9	1.7*	15.1	9.5*
	30 days	0.6	0.6	0.6	0.1	0.7	0.3
Heroin:	Life	1.5	0.9	1.0	0.5	1.2	0.8
	30 days	0.1	0.2	0.1	0.1	0.0	0.0
Inhalants:	Life	4.3	2.2	1.0	0.2	4.2	2.8
	30 days	0.4	0.0	0.1	0.0	0.5	0.1
Narcotics:	Life	3.4	2.1	2.6	1.0*	8.9	5.2*
	30 days	0.3	0.1	0.3	0.3	0.6	0.4
Any illicit drug use:	30 days	4.6	3.3	2.8	2.0	5.4	5.7
R_x Amphetamine:	Life	1.5	2.1	2.1	3.2	3.3	4.0
	30 days	0.2	0.3	0.2	0.7	0.4	0.4
R_x Barbiturates:	Life	2.4	1.8	1.2	1.5	4.2	3.7
	30 days	0.4	0.1	0.0	0.3	0.3	0.8
R_x Tranquilizers:	Life	4.3	9.0*	3.3	5.8*	8.2	13.3*
	30 days	0.5	0.9	0.6	0.9	0.5	1.8*

[a]*N*s vary minimally across analyses.
[b]The "Hispanic" category includes young adults who identify themselves as Mexican, Cuban, Puerto Rican, or Latin American.
*Significant at $P \leq .001$.

for lifetime use of alcohol. Most women (between 77 and 81%) and men (64 to 73%) report "light" or "moderate" levels of drinking. Hispanic and African-American women are more likely to abstain or to be "light" or "moderate" drinkers than are their male counterparts. Gender differences are smaller for Whites; in fact, equal rates of White women and men have consumed alcohol in their lifetime. Using the ACL measure described earlier, significantly fewer women than men in each race can be categorized as "heavy drinkers." Gender differences for Whites (men, 34% versus women, 20%) are smaller than the differences between Hispanic (26 vs 8%) and African-American (21 vs 7%) women and men.

Alcohol Problems and Dependency Symptoms

When only respondents who are current drinkers are included in the analyses, gender differences within each of the three race groups narrow considerably. As reflected in Table 2, 15.3% of African-American women and 30.5% of African-American men who report drinking in the past month are classified as "heavy drinkers." Similarly, almost one-half as many Hispanic women (15.5%) as Hispanic men (34.8%) are classified as "heavy drinkers." Gender differences in "heavy drinking" are smallest between White female (29.8%) and male (42.9%) current drinkers.

Table 2.

Alcohol Problems[a]

	Hispanic[b]		African-American		White	
Minimum N[c]	Male (663)	Female (472)	Male (972)	Female (693)	Male (1,908)	Female (1,713)
"Heavy drinker"	38.4	15.5*	30.5	15.3*	42.9	29.8*
Six or more drinks on one occasion in past month	71.9	39.2*	56.6	31.2*	71.3	44.3*
Alcohol-use-related problems (1 or more in past year)	23.3	13.9*	26.8	14.7*	33.5	23.5*
Alcohol dependency symptoms (1 or more in past year)	39.8	19.7*	45.7	21.9*	39.7	24.0*

[a]Includes only respondents who report drinking in past month.

[b]The "Hispanic" category includes young adults who identify themselves as Mexican, Cuban, Puerto Rican, or Latin American.

[b]Ns vary minimally across analyses.

*Significant at $P \leq .001$.

In addition to reporting higher levels of overall drinking, men are also more likely to engage in "heavy" episodic ("binge") drinking. Table 2 shows that the majority of men in each of the three race groups report having six or more drinks on at least one occasion in the past month; more than 30% of Hispanic and African-American women and nearly one-half (43%) of White women report at least one episode of binge drinking. Results of analyses not shown indicate that White men are most likely to report binge drinking (about two per month on average); African-American women report the fewest episodes of binge drinking—fewer than one per month. "Heavy" episodic or binge drinking is believed to be more closely associated with alcohol-use-related problems than is equivalent amounts of alcohol consumed over longer periods of time (Weschler and Issac, 1992).

Although African-American men appear less likely to be "heavy drinkers" than either Whites or Hispanics, almost one-half (45.7%) report at least one alcohol dependency symptom (e.g., tried to quit drinking but failed, drink first thing in a.m.) within the past year; 27% report three or more symptoms. Interestingly, among Hispanics and African-Americans (but not Whites), the percentages of both male and female respondents reporting alcohol dependency symptoms are higher than the percentages who report "heavy drinking." This may reflect race or cultural differences in symptom recognition or willingness to report such symptoms, or the fact that substantial numbers of women and men in these groups report binge drinking. Alcohol problems (e.g., have you gotten into a heated argument while drinking?) may also be related to binge drinking. A substantial number of women report aggression-related drinking problems. Nevertheless, men in each of the three groups are more likely than women to report such problems.

The variable "drinking alone to become high" was analyzed separately (though not presented in the tables shown) to determine whether women are more likely than men to drink alone. Almost twice as many African-American men (23%) as women (12.5%) who drank alcohol in the past month reported drinking alone to become high. These rates are higher than those reported by Hispanic men (15.5%) and women (5.4%) and White men (11.5%) and women (5.7%).

Age of initiation of AOD use has been found to be an important indicator of later use, and the fact that women tend to begin AOD use at older ages than men is believed to be a protective factor in moderating later use (Chen and Kandal, 1995). In this sample, men in each race group began drinking alcohol roughly one year earlier than women (approximately 16.5 and 17.5 years old, respectively). Regression analysis indicates that the younger women and men in each of the race groups are when they begin to drink, the more

likely they are to be current "heavy drinkers." This finding will be further discussed at the end of the Results section.

Cigarettes

The majority of women and men in each race group have tried cigarettes at sometime in their lives; of greater importance, however, are the percentages who report more recent use. Table 1 shows that close to one-half of men in each of the three groups report smoking cigarettes in the past month. Among Whites, equal percentages of women (43.7%) and men (44.2%) report smoking in the past month. Gender differences are somewhat larger for Hispanics than for African-Americans with significantly more men than women reporting cigarette smoking in the previous month. Similar patterns of gender differences are reflected in rates of "heavier use" (one-half or more packs per day). Overall, these data reflect larger percentages of current smokers, especially among African-American women and men, than do most other surveys (see e.g., Fiore et al., 1989; USDHHS, 1993).

Marijuana

Most men in each of the race groups and most White women have at least experimented with marijuana in their lifetime. Close to one-half of Hispanic and African-American woman and two-thirds of White women report lifetime use of marijuana. However, more men than women report both lifetime and past month use of marijuana. Similarly, rates of "heavier use" (six or more times in the past month) are significantly higher for men than for women in all three groups. Gender differences in marijuana use are smaller (though still statistically significant) in White and African-American than in Hispanic respondents.

Other Illicit Drugs

Prevalence rates for a variety of other illicit drugs including cocaine, stimulants, barbiturates, tranquilizers, psychedelics, heroin, other narcotics, and inhalants are included in Table 1. For most of these drugs, fewer women than men report use. Rates of use tend to be highest among White men and lowest among African-American women. There are no significant gender differences in past month use of any of these drugs in any of the three race groups. Differences in rates of lifetime use for most of these drugs are small or nonsignificant.

Prescription Drugs

A number of studies and review articles from the 1970s report that substantially greater numbers of women than men use prescription drugs (e.g., Cooperstock, 1971, 1981). In this sample, very few women or men report use of these drugs, and with the exception of prescription tranquilizers, gender differences are not statistically significant. More women than men in each of the race groups report lifetime use of prescription tranquilizers. Rates of past month use of tranquilzers for White women are more than twice that reported for White men. Rates of use of other prescription drugs, especially past month use, are very low in all groups for both women and men. It is important to note that rates of prescription drug use are considerably lower than those found in the 1982 National Household Survey of Drug use for respondents of similar ages (Clayton et al., 1986). One explanation for underreporting in the NLSY is the fact that many respondents had the same interviewers that they had in previous years (Mensch and Kandal, 1988b). However, it would seem that familiarity with the interviewer would have less influence on accurate reporting of prescription drug use than of illicit drug use. Issues related to underreporting are discussed later.

Multiple Drug Use

Multiple drug use appears to be increasingly common among both women and men, especially among cohorts 18 to 34 years old (USDHHS, 1993). Most national studies indicate that older women and men most commonly use only one drug (usually alcohol), but those under 35 are more likely to report use of drugs in addition to alcohol (e.g., USDHHS, 1993). As reflected in Table 3, using alcohol and cigarettes or alcohol and marijuana are the most common lifetime patterns of multiple drug use for both women and men from all race groups included in this study. The majority of men from the three groups and the majority of White women report use of both alcohol and cigarettes and alcohol and marijuana in their lifetime; close to one-half of Hispanic and African-American women report these patterns of multiple drug use. In regard to more recent use, between 21% (Hispanic women) and 40% (African-American men) of the sample reported use of both alcohol and cigarettes in the previous month. Fewer respondents used both alcohol and marijuana in the past month; however, almost one-fourth of African-American and White men report using both of these substances in the past month. There are no gender differences in lifetime use of both alcohol and cigarettes or in past month use of alcohol and illicit drugs for White respondents. Use of alcohol and illicit drugs other than marijuana in the past month is less common, but substantial

Table 3.

Multiple Drug Use

	Hispanic[b]		African-American		White	
Minimum N[a]	Male (933)	Female (951)	Male (1526)	Female (1,512)	Male (2,744)	Female (2,773)
Alcohol and cigarettes:						
Lifetime	78.9	67.6*	79.7	70.5*	83.6	83.8
30 days	35.6	21.2*	39.6	26.2*	38.4	34.0
Alcohol and marijuana:						
Lifetime	62.8	43.4*	66.5	46.7*	71.3	66.2*
30 days	20.3	9.2	22.5	11.7*	23.7	13.4
Alcohol and illicit drugs:						
Lifetime	27.1	19.8	19.2	11.1	36.6	31.1*
30 days	8.1	5.3	4.8	2.8	8.7	7.3
Alcohol and prescription drugs:						
Lifetime	7.1	10.9	5.5	8.9	13.0	17.9
30 days	0.6	0.7	0.5	1.0	0.8	2.1

[a]*N*s vary across analyses.

[b]The "Hispanic" category includes young adults who identify themselves as Mexican, Cuban, Puerto Rican, or Latin American.

*Significant at $P \leq .001$.

numbers of both men and women in each group report using both alcohol and at least one other illicit drug in the previous month. Fewer African-American respondents report use of alcohol and illicit drugs (both lifetime and past month) than do Whites or Hispanics. Although prevalence rates are very small, twice as many African-American and White women as African-American and White men report past month use of alcohol and prescription drugs. There are no gender differences in past month use of alcohol and prescription drugs among Hispanic respondents.

Regression Analyses

Although an understanding of gender differences in the prevalence and incidence of AOD use is crucially important, the rates of use presented in Tables 1 through 3 raise several additional questions. For example, it is unclear whether the size of gender differences varies across ethnic groups. This question is important for assessing the need for gender-targeted interventions which are also culturally sensitive. It is also unclear whether gender, beyond acting as a main effect, acts as a moderator on the relationships between AOD use and other predictors; that is, does gender interact with known predictors

of AOD use in a way that increases risk for males or females? A third ambiguous area is whether there are differences across gender in the recency and frequency of use among those who report using AODs. Most important, while prevalence rates suggest gender differences in proportions of subpopulations who report no or any substance use, they leave open the question of whether there are gender differences in patterns of use among users.

To explore these questions, a series of regression analyses was conducted and are reported in Tables 4 and 5. In all of these analyses, gender is a dummy variable coded 0 for males and 1 for females. Ordinary least-square regression is used, and unstandardized coefficients are reported so that effects can be compared across ethnic groups (Blalock, 1979).

In Table 4, age at first use of alcohol is included as an additional independent variable. Early initiation is a well-established, robust predictor of later AOD use, and among teenagers, alcohol prevalence rates relative to those of other substances suggest alcohol is, in general, the most likely "gateway" substance (Johnston et al., 1993). If gender acts as a moderator for other predictors, the interaction should be apparent here. For these analyses, age at first use has been recoded into a deviation score by subtracting the mean age (17) from each individual's score. This "centers" the variable on the average, simplifying the interpretation of the coefficients while leaving the variance of the measure unchanged (Cohen and Cohen, 1983).

Four independent variables are examined in Table 4, each of which was discussed earlier. The cigarette and marijuana variables used in these analyses are the recency/frequency measures. Alcohol consumption (ACL) is the gender adjusted consumption measure. "Heavy" episodic drinking is a sum of the number of times in the past month that the respondent has had six or more drinks. Those who reported never using cigarettes, marijuana, or alcohol were excluded from the calculation of the respective regression equation. These analyses, therefore, examine gender differences among initiators only.

Examining the coefficients in Table 4, it is first important to note that the interaction terms were statistically insignificant in all equations. In other words, the effect of age at first use of alcohol does not vary significantly by gender. Delaying the onset of drinking through prevention programs should have equal effects on both females and males.

If we consider the main effects of age at first use, it is interesting that, except for Whites, this variable is not significantly related to cigarette or marijuana recency/frequency. This raises questions about alcohol's significance as a gateway drug in Hispanic and African-American populations. We will save speculations about this finding for subsequent research.

The main effects of gender also vary somewhat across ethnic groups. When age at first drink is controlled, there are no significant gender differences in the reported recency/frequency of cigarette use. For Hispanics and African-

Table 4.

Regression Coefficients for Gender and Age Began Drinking Predicting AOD Use[a]

	Hispanic[b]	African-American	White
Cigarettes:			
Constant	3.2337	4.0746	3.8765
b(Gender)	−.1180	−.1787	.1178
b(Age)	−.0349	−.0084	−.2115**
b(Gender × Age)	−.1911	−.0918	−.0076
Adj. R^2	.0036	.0031	.02394
N	(886)	(1,406)	(3,421)
Marijuana:			
Constant	3.9020	4.2590	3.9567
b(Gender)	−.1583	−.0873	.3240**
b(Age)	−.0115	−.0642	−.0763**
b(Gender × Age)	−.0821	−.0641	−.0526
Adj. R^2	.0062	.0057	.0431
N	(418)	(713)	(1,644)
Alcohol consumption (ACL):			
Constant	.0426	.0371	.0472
b(Gender)	−.0124**	−.0088**	.0080**
b(Age)	−.0037**	−.0035**	−.0035**
b(Gender × Age)	−.0013	−.0001	−.0001
Adj. R^2	.0638	.0465	.0436
N	(969)	(1,441)	(3,331)
Heavy episode drinking:			
Constant	2.6846	2.6256	2.7511
b(Gender)	−.3881*	−.0122*	−.6022**
b(Age)	−.0954*	−.0656*	−.1205**
b(Gender × Age)	−.0614	−.0122	.0276
Adj. R^2	.0412	.0228	.0621
N	(641)	(775)	(2,392)

[a]Includes only respondents who report drinking in past month.

[b]The "Hispanic" category includes young adults who identify themselves as Mexican, Cuban, Puerto Rican, or Latin American.

*Significant at $P \leq .05$.

**Significant at $P \leq .001$.

Americans, there are also no significant gender differences in the reported recency/frequency of marijuana use. White women, however, report significantly less marijuana use than White men.

When the two alcohol consumption variables are regressed on gender and age at first use of alcohol, there are significant main effects of gender on both the adjusted consumption level measure and the "heavy" episodic drinking variable. Comparison of the unstandardized coefficients across ethnic groups

suggests that differences in the adjusted consumption level are not substantive; however, gender differences in "heavy" episodic drinking vary greatly by ethnicity. Episodic drinking patterns show the smallest gender differences among African-Americans, followed by Hispanics, and then by Whites.

This alters, in some ways, conclusions regarding multiple AOD use that might have been drawn from Table 3 and highlights the importance of examining alternative measures of drug use in subpopulations with different prevalence rates. The bivariate prevalence measures reported in Table 3, based on lifetime or past month use, include subjects who have never used these substances. When nonusers and users are examined jointly, there appear to be greater gender differences among Hispanic and African-Americans than among Whites. The equations in Table 4 are conducted only on those subjects who report initiation of substance use. Once use has begun, use of other substances does not differ as greatly among non-Whites as it does for Whites. This apparent paradox suggests that there may be ethnic differences in the way proscriptive norms (those that emphasize nonuse) and prescriptive norms (those that govern how to use) are applied to females and males. For example, it may be that in Hispanic and African-American cultures there is a greater frequency of norms which proscribe all substance use for women—a premise supported by the lower lifetime and past month prevalence rates for non-White women reported for nearly all substances in Table 1. White women, in contrast, may be more likely to experience normative structures which prescribe use, particularly for alcohol, in certain situations. Since proscriptive norms offer fewer social controls once substance use has been initiated, multiple drug use among Hispanic and African-American women is more likely to conform to male norms once the prohibition has been broken. This is a topic that has received little attention in the literature, but may hold an important key to our understanding of gender differences across cultures.

The regression analyses presented in Table 5 examine gender differences in the effects of the level of alcohol consumption on reported alcohol-related problems. As noted earlier, Welte and Barnes (1987) reported such differences among adolescents. The independent variables in these analyses are the gender dummy variable and the adjusted alcohol consumption level measure. The two dependent variables are the alcohol problems and alcohol dependency symptoms scales examined in Table 2.

Again, the interaction terms were statistically insignificant in all equations. It appears that gender does not affect the relationship between consumption and perceived problems. In fact, the main effects for gender suggest that, for all ethnic groups, when consumption level is controlled, women are *less* likely to report alcohol-related problems or alcohol dependency symptoms.

There are a number of ways the difference between this finding and that of Welte and Barnes could be interpreted. The most straightforward interpre-

Table 5.

Regression Coefficients for Gender and Level of Alcohol Consumption Predicting Alcohol Problems and Alcohol Dependency Symptoms[a]

	Hispanic[b]	African-American	White
Alcohol-use-related problems:			
Constant	.1309	.1413	.1793
b(Gender)	−.0390**	−.0565**	.0483**
b(ACL)	1.8448**	1.8989**	2.0093**
b(Gender × ACL)	−.5183	−.5077	−.1422
Adj. R^2	.1056	.1069	.1006
N	(1,132)	(1,663)	(3,618)
Alcohol dependency symptoms:			
Constant	.1019	.1164	.0839
b(Gender)	−.0426**	−.0542**	.0302**
b(ACL)	1.4681**	1.3952**	1.1162**
b(Gender × ACL)	−.2552	−.3852	−.1331
Adj. R^2	.1885	.1461	.1006
N	(1,131)	(1,663)	(3,617)

[a]Includes only respondents who report drinking in past month.
[b]The "Hispanic" category includes young adults who identify as Mexican, Cuban, Puerto Rican, or Latin American.
*Significant at $P \leq .05$.
**Significant at $P \leq .001$.

tation is that perceptions of alcohol-related problems and dependency differ between adults and adolescents. If this interpretation is accepted, explanations of the gender differences might be found in differences in gendered social roles prescribed for adults and adolescents. It is also possible that our finding is a statistical artifact resulting from the adjustment that takes gender differences in body weight and consumption into account. Regarding this second interpretation, however, it is equally possible that the finding reported by Welte and Barnes is a statistical artifact resulting from their *failure* to take body weights and composition differences into account. Resolving this issue requires further research into the sensitivity and construction of gender-sensitive measures of consumption.

DISCUSSION

Few studies have explored gender differences in AOD use, particularly within race groups, and most have focused on younger populations or have been conducted within limited geographic locations. This study reports findings from a national sample of young adults (ages 19 to 25 years old) that

includes representative numbers of African-American, Hispanic, and economically disadvantaged Whites—groups that are usually underrepresented in national surveys. Although this sample overcomes many of the problems and limitations common to studies of AOD use (e.g., inadequate sample sizes, high levels of attrition), some caution must be used when interpreting the findings. It appears that some underreporting of drug use likely occurred in the 1984 NLSY survey. Mensch and Kandal (1988b) compared the NLSY findings with those from two other national studies and found that fewer persons in the NLSY reported using illicit drugs. For example, when comparing reports of drug use by NLSY respondents with those of a similar aged group from the 1982 National Household Survey of Drug Abuse (NHSDA), they found that approximately one-third fewer persons in the NLSY reported use of cocaine and about one-half as many reported use of hallucinogens and tranquilizers. Use of prescription drugs was also reported by fewer respondents in the NLSY than in the NHSDA. Underreporting seems to have been more common in women and minorities and was concentrated among "experimental" and "light" drug users. There was considerably less tendency to underreport alcohol than marijuana or cocaine use. Thus, because the rates of drug use reflected in the findings (particularly illicit and prescription drugs) reported here are likely lower than actual rates of use, caution must be used interpreting and generalizing these findings.

The epidemiology of women's AOD use has been the subject of increasing interest over the past 25 years. Of particular interest has been the question of whether rates of women's use of AODs are converging with those of men's. The data reported here are relatively consistent with other national studies (see e.g., Wilsnack et al., 1994) and show little evidence of dramatic shifts in rates of women's use of alcohol or other drugs. Our findings support previous studies that report higher rates of use of most drugs among men. However, by examining gender differences across racial groups a more variable picture emerges. For example, Whites show smaller gender differences in prevalence rates of cigarette use and in most measures of alcohol use than do African-Americans and Hispanics. This is likely related to the greater numbers of nondrinking African-American and Hispanic than nondrinking White women and to the fact that more White women than Hispanic or African-American women smoke cigarettes.

Although considerably lower than men's rates, rates of "heavy" alcohol consumption among current (past month) drinkers are high in all three groups of women. Approximately 15% of African-American and Hispanic women who report any drinking in the past month are classified as "heavy drinkers"; almost 30% of White women who report alcohol consumption in the past month are classified as "heavy drinkers." These rates are substantially higher than

those reported in most surveys of women's alcohol use and can be explained, at least in part, by the use of a more sensitive measure that adjusts drinking levels for women's lower body weight. In addition, female respondents included in the findings presented here are of the age range that reports the highest level of drinking and drinking-related problems. For example, in a 1991 national survey of women's drinking (Wilsnack et al., 1994), 26% of women aged 21 to 30 years old reported experiencing at least one drinking problem in the last year, compared with rates ranging from 2 to 17% in older age groups.

Although prevalence rates are very small, twice as many women as men report past month use of alcohol and prescription drugs, and there no are gender differences in use of alcohol and cigarettes or in past month use of alcohol and illicit drugs for White respondents.

The high rate of "heavy" drinking and the increased health risks associated with the tendency to combine alcohol with cigarettes, with marijuana, or with other illicit drugs, emphasizes the importance of education concerning the risks of "heavy" drinking and polydrug use. Given the importance of age of initiation of alcohol use on subsequent AOD use, prevention strategies should continue to target both female and male children and adolescent high risk groups. These findings also support the need for more research exploring the correlates and antecedents of alcohol misuse to help identify young women (and men) in various subpopulations imputed to be at greatest risk for developing alcohol dependence or experiencing alcohol-related problems. It is also important to continue to monitor the trends in women's alcohol and other drug use. Examples of questions to be explored in the future include: Are differences in prevalence rates of drinking between Black and White women continuing to decrease? Will the current relatively low rates of "heavy" drinking and drinking problems among Hispanic women continue in younger, more acculturated women of Hispanic decent? Are women now more likely than in the past to combine alcohol with other drugs, particularly cigarettes? Do risk factors related to AOD problems differ by gender? and Are there cultural differences in gender norms for substance use?

Because different combinations of drugs (e.g., alcohol and psychoactive prescription drugs, or alcohol and marijuana or other illicit drugs) appear to have different distributions and different correlates across subgroups of women in the general population (Bobo, 1989), it is important to better understand how patterns of multiple substance use vary among subpopulations of women. Better measures including those that are gender sensitive are needed to assess concurrent multiple drug use.

Reports that rates of use of many drugs have declined or leveled off over the past decade or so (Johnston et al., 1993) are encouraging and indicate that

educational efforts aimed at youth may be having an effect. However, a notable exception to this trend is the number of young women who smoke cigarettes. Our findings reflect high levels of smoking among both women and men. As in other surveys, equal numbers of White women and men (about 56%) in this sample report smoking in the past month. However, these data show considerably larger percentages of smokers among African-American men (47.5%) and women (37.7%) than is typically reported in other surveys (e.g., USDHHS, 1993). This may reflect the greater representation of minority populations in the NLSY than in other general population surveys. Nicotine dependence is an important problem for women. After rising steadily since the 1960s, lung cancer exceeded breast cancer in the mid-1980s as the leading cause of cancer death in women. Since the middle to late 1960s, prevalence of smoking has decreased, but this decline has been more rapid in men than women (Waldron, 1991; Fiore et al., 1989). One of the primary explanations for high rates of initiation and continuation of smoking among young women, especially among young White women, is weight control. Prevention programs for women, particularly those targeting adolescent and young women, must consider and incorporate education on other, more healthy methods of controlling weight. Also important are strategies that counter the media's portrayal of smoking as a widespread, glamorous, and relatively harmless behavior.

The epidemiology of women's AOD use is more complex than was previously appreciated. As with men, women's patterns of AOD use vary substantially between races as well as within race. More data on gender differences in various racial/ethnic groups are definitely needed. In addition to more careful documentation of gender differences in patterns of AOD use (including multiple drug use), future studies are needed that explore differences in the etiology of AOD use and AOD-related problems. Studies must begin to address sociocultural and environmental influences such as age, culture and acculturation, geographic residence, and employment status. Only by gaining a better understanding of the complex interactions of gender with these factors on AOD use can we develop more effective prevention and intervention strategies.

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NOTES

1. Because of the small sample sizes within ethnic subgroups, data from Hispanic women and men of various origins are pooled. Hispanics are not a homogeneous group, especially in terms of AOD use. For example, Bachman et al. (1991) separated Mexican-American, Puerto Rican, and Latin American students, and found Mexican-Americans much more likely to have engaged in "heavy" drinking than Puerto Rican or Latin American students. Caetano (1989) reports similar findings in relation to alcohol use and Escobedo et al. (1989) note that prevalence of smoking varies greatly among Hispanic groups. Developments within the field of racial/ethnic studies clearly indicate that intraethnic variations should be taken into account when examining AOD questions. Factors such as ethnic identity, native versus foreign born, and acculturation are important influences on many health behaviors, including AOD use. In fact, our interpretation of intercultural gender differences found in the regression analyses on Table 4 are also suggestive of intracultural differences in the structure of gender-specific norms for AOD use. Despite these limitations, the findings provide important additional information about trends in AOD use, particularly those related to gender differences.
2. In other reports of NLSY data, respondents are classified as either Hispanic, non-Hispanic Black, and "other" (non-Black, non-Hispanic). In our "White" category we exclude respondents who reported having one of the following as their first or only racial/ethnic origin: none, Black, Chinese, Filipino, Hawaiian (Pacific Islander), American Indian, Asian Indian, Japanese, Korean, Cuban, Chicano, Mexican, Mexican-American, Puerto Rican, other Hispanic, other Spanish, Vietnamese, other, or American.
3. Johnson (1982) used a more precise measure that corrected for the percent of pure alcohol in beer, wine, and liquor (4, 15, and 45%, respectively) than the one we used which assumes that a "drink" of beer, wine, or liquor are roughly equivalent.

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RESUMEN

Este artículo describe las diferencias de los sexos en referencia al uso y abuso del alcohol y otras drogas (AOD), tomando una muestra representativa de hombres y mujeres jóvenes estadounidenses. Los datos se obtuvieron de la Encuestra Nacional Longitudinal de la Juventud. El estudio se concentra en las diferencias de los sexos en cuanto a la prevalencia y reiteración de conducta del uso de AOD en los jóvenes adultos de origen africano, hispano, y anglosajón entre las edades de 19 y 24 años. Los autores formulan un resumen de los resultados de su análisis y presentan las implicaciones de los resultados de su análisis y presentan implicaciones de la prevención del abuso de AOD.

RÉSUMÉ

Cet article décrit l'usage et l'abus de l'alcool et autres drogues (AOD) basés sur les différences de sexes et établis d'après une sélection représentative de jeunes femmes et de jeunes hommes aux Etats Unis. L'information à été retirée du National Longitudinal Survey of Youth (NLSY) et concentrée sur la différence de sexes en faisant prévaloir les différences de l'usage des AOD chez les Noirs, les Hispaniques, et les Blancs de 19 à 24 ans. Les résultats sont récapitulés et les conséquences pour la prévention sont mises en évidence.

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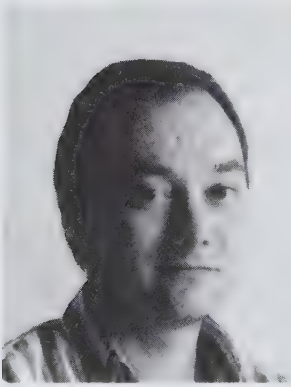

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Issues, Credos, Caveats, and Unresolved Issues

Perspective on the Integration of Substance User Needs Assessment and Treatment Planning

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ABSTRACT

In the 1970s and 1980s, several techniques for assessing the needs for substance user treatment were developed. Generally these techniques relied upon the data developed from large-scale data-gathering systems, originally designed to assess the capacity of the substance user treatment system nationwide. The need assessment techniques generally require making estimates of the prevalence of substance use disorders in the population and then applying them to the national utilization experience. As first attempts often do, these approaches tended to simplify complex problems and tended to rely too heavily on the only available data. The result was that they tended to reify current practice rather than to define *best* practice. In the 1990s, new challenges face those attempting to assess needs for substance user services. As a result of the last decade's emphasis on cost containment, new concepts have challenged traditional views of needs assessment. This paper will discuss those new concepts and their impact on the needs assessment endeavor. In particular, the impact of the concept of *medical necessity* will be examined.

Key words. Needs assessment; Medical necessity; Managed care

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INTRODUCTION

The late 1970s were an exciting time for substance use/users services; in part because they were just beginning to be funded by both federal and state governments. Money was available and costs were reasonable. Services were often provided through nonprofit "ma and pa" operations. The public was willing to provide tax money to treat the substance user. One challenge for the publicly funded system was to create a planning process for substance user treatment services to provide a rational basis for investing state and federal funds. As a result, several techniques were developed for projecting the need for various levels of treatment, including inpatient and outpatient services, based upon national treatment utilization data (e.g., Cahalan, 1976; Alcohol Epidemiological Data System, 1981; Ford, 1985; Ford and Luckey, 1983; Ford and Schmittdiel, 1983). One immediately obvious conclusion in comparing national utilization data to treatment capacity in Nebraska, for example, was that there were far too many inpatient treatment beds and far too few lesser restrictive options. This observation, along with early research findings that essentially demonstrated no differences in treatment outcome between inpatient and outpatient substance user services (Miller and Hester, 1986), led to the formulation of policies in several states, i.e., that state and federal treatment funds would be used to increase nonhospital residential and outpatient capacity, and would not be used to support the surplus of inpatient beds.

Between the late 1970s and the late 1980s, major restructuring of the substance user treatment system occurred. This restructuring was due, in part, to the growing availability of public and private insurance (see Sharfstein et al., 1984, for a complete discussion of the evolution of insurance coverage for psychiatric services). The growth in private payment for substance user treatment was based on both employer concern for employee welfare and on the increasing number of states which passed legislation mandating the coverage of substance user services, albeit with limits on days, visits, or dollar amounts to be covered. According to Glazer and Bell (1993), half of all states require drug "abuse" coverage, and alcoholism treatment benefits are now required by all but one state. The other major restructuring occurred with the rapid increase in the number of for-profit hospital chains, increasing inpatient capacity nationwide. Glazer and Bell (1993) noted that the number of for-profit psychiatric hospitals doubled from 220 to 440 between 1984 and 1988. The 12 step or A.A. model of treatment was dominant, and it seemed to require a 30-day length of stay. Costs began to rise and employers who paid much of the insurance coverage for their employees began to question the costs associated with substance user treatment, as well as its outcome. In response, *managed care techniques* were introduced in an effort to control increases in substance

user treatment utilization and cost. The goal of managed care is to contain cost while preserving (or at least not impairing) the quality of care. Further, the 1980s marked a redirection of federal funding priorities away from supporting substance user treatment and toward basic research.

In the 1990s, styles of practice have changed, as indicated by a decline in average length of inpatient stay from 21.8 days in 1988 to 13.3 days in 1993 (Mutual of Omaha, 1990, 1993). The number of inpatient substance user treatment beds has been reduced. In fact, it was estimated in 1991 that nearly half of the private chemical dependency treatment beds in the United States were empty (OSS, 1991).

All involved in the substance user treatment system have been affected by the changes of the past two decades. These changes have challenged some long held practices and beliefs about the appropriate way to treat and deliver services to substance users. Some of these challenged beliefs include:

- That most substance users are best treated in a structured inpatient residential treatment program
- That outpatient services are best conceptualized as "aftercare" to inpatient treatment
- That formalized treatment (as opposed to spontaneous recovery or self-directed recovery) is the only really successful method of arresting substance use
- That substance "abuse" is a "disease" which is best treated by nonmedically trained personnel, often in what traditionally have been thought of as medical facilities, e.g., hospitals, and should, therefore, be covered by insurance designed to cover loss due to sickness and injury
- That substance users treatment should be sold in units or blocks of time rather than in units related to patient progress. Another way of saying this is that substance user treatment occurs until the treaters believe the "disease" is arrested rather than until directly observable symptoms are no longer visible. Thus, for example, treatment in an inpatient setting occurred even though there was rarely the opportunity for the patient to have access to substances to determine whether the desired resistance had actually "taken"
- That substance user treatment should be funded, either with public or private funds, even though its efficacy was not clearly established

These very beliefs were the assumptions upon which some of the needs assessment techniques developed in the late 1970s and early 1980s were built.

Given these challenges to the conventional wisdom, or at least to the commonly held view about substance user treatment, we are now faced with how

best to conceptualize treatment needs assessment, as well as how to apply that conceptualization to predicting the need for treatment services.

THE CONCEPT OF MEDICAL NECESSITY

A cornerstone of most of the recently emerged methods of managing and providing health care services, including those for substance users, is the concept of "*medical necessity*." Some may wish to substitute "clinically necessary," a less medicalized term for the same concept. The assumption is that if only medically necessary services are provided, then health care cost can be moderated and/or contained. Another way of saying that is that if the outcome is the same or better, why not choose the least expensive treatment intervention possible?

Clearly then, in planning for substance user treatment, only the least expensive intervention which will optimize treatment results should be used.

A review of the substance user needs assessment literature from the late 1970s and early 1980s indicated that there was generally little consideration given to outcome. The assumption seemed to be that the existence of a "need" (or more accurately, *demand*) was sufficient to justify service provision. Today payers and their policymakers are concerned about containing costs, and they want some assurance that their purchase of services will lead to improved patient functioning, particularly on the job.

The definition of *medical necessity* found in many commercial insurance contracts usually requires that the service in question:

- Be used for the purpose of treating a sickness or injury
- Be appropriate and consistent with the symptoms and finding or diagnosis of the identified sickness or injury
- Be provided in accord with generally accepted medical practice
- Be provided on a cost-effective basis, such as inpatient vs outpatient care, or surgical vs medical or other types of care

With the introduction of the concept of medical necessity, it is no longer sufficient to supply a service just because a patient requests (or demands) it, or because the service is going unused. Rather, the goal is to provide *only* that service which has been shown to be effective for the injury or sickness being treated. Such a strategy is, of course, deceptively simple when considering substance user treatment. Indeed, our knowledge of the relationship between the imputed disease, the patient's needs/characteristics/symptoms, the specific treatments/procedures necessary to effectively address those needs/characteristics/symptoms, who are the preferred and/or most efficacious treatment agents, and the appropriate level of care or setting to most efficiently and effectively

provide those procedures is fairly limited. In fact, the substance user intervention field still seems to be attempting to convince the public that treatment indeed does work, let alone that treatment can be performed cost effectively, even though other diseases may rarely be treated effectively. For example, the best that can be hoped for with some kinds of cancer treatment is a few additional months of a fairly poor quality of life for a given patient. Other diseases where treatment may net little in terms of recovery or improved quality of life include multiple sclerosis, cystic fibrosis, muscular dystrophy, and lupus erythematosus. Thus, the notion of cost-effective substance user treatment is also intertwined with societal attitudes which still consider substance "abuse" not as a sickness but rather as a self-inflicted condition.

ISSUES, CAVEATS, AND UNRESOLVED ISSUES

As the substance user treatment system moves into the mid decade, there are several key issues, and unresolved issues for those endeavoring to assess needs for substance "abuse"/user treatment:

1. There must be ongoing research to establish realistic relationships between a patient's signs/symptoms/characteristics and need for a given intervention. The concept of "matching" a person's strengths and weaknesses derived from an appropriate intake process with achievable, meaningful, acceptable, flexible *goals*, through suitable *techniques*, with quality *staff*, pro-change *policies*, in facilitating *sites*, over a period of *time* sensitive to this complex process and which can be evaluated is necessary. This is simply a restatement of the requirement to understand when a given intervention will have a likelihood of achieving a positive outcome for a given set of signs, symptoms, and characteristics.
2. Given society's limited resources, there must be distinction drawn between clinical *desirability* and medical/clinical *necessity*. That which is necessary is likely to be more valued than that which is only desirable.
3. Inevitably, ethical issues must be considered in substance user needs assessment. For example, judgments may need to be made about whether it is defensible to limit certain kinds of care. Is it better to limit care with no effect, or moderate effect, or of proven benefit? Further, what criteria should be used to judge whether a service should be made available? For example, is it more desirable to provide a service of proven benefit to a given individual if its expense precludes the provision of moderately beneficial services for 10 others. Similarly, is it more desirable to provide services of moderate benefit to the most "severe" substance users than to provide proven benefits to moderate users?

4. From a policy perspective, it is important to continually reassess the role of public funding in support of the substance user treatment system. That is, should public funds be used to provide services to those unable to obtain services elsewhere, or should public funds be used to provide the greatest benefit for the greatest number?

Clearly these value-laden issues make substance user need assessment a far thornier proposition, given our resource limitations, than we may have anticipated a mere decade and a half ago. The results of applying any formula to assess need cannot, and should not, stand independently of the judgments society must make.

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RESUMEN

En las décadas de los 70 y 80 se desarrollaron varias técnicas de evalución de las necesidades de tratamiento de drogadictos y otras dependicas químicas. Generalmente, estas técnicas se apoyan en la información desarrollada por el sistema a gran escala de recolección de información que fue diseñado para evaluar la capacidad del sistema de tratamiento de drogadictos en todo el país. La técnica de evaluación de necesidades generalmente requiere hacer

estimaciones de la prevalencia de "desórdenes" del uso de sustancias en la población y luego su aplicación a la experiencia nacional de utilización. Como siempre, los primeros intentos de estas técnicas han tendido a simplificar problemas más complejos y a confiar demasiado en los únicos datos disponibles. El resultado fue que tendieron a materializar las práctica actuales en lugar de definir cual era *la mejor* práctica a seguir. La década de los 90 presenta nuevos retos a aquellos que intentan evaluar la necesidad de servicios a los drogadictos. Como resultados del énfais puesto en la contención de costo durante la última década, los puntos de vista tradicionales sobre las necesidades de evaluación enfrentan nuevos retos. Esta tesis presenta estos nuevos conceptos y su impacto en la evaluación de necesidades. Se examina, en particular el impacto del concepto *necesidad médica*.

RÉSUMÉ

Dand les années 1970 et 1980, plusieurs techniques portant sur l'évaluation des besoins pour le traitement du toxicomane ont été développées. Elles s'appuient, en général, sur les données établies à partir d'un système de collecte à grande échelle, conçues pour évaluer la capacité du système de traitement des toxicomanes au niveau national. Les techniques d'évaluation des besoins exigent, en général, des estimations de la fréquence des << désordes >> liés à la toxicomanie dans la population, qui seront ensuite appliquées à l'expérience d'utilisation nationale. Comme beaucoup de premières tentatives, ces approches tendent à simplifier des problèmes complexes et ont le désavantage de s'appuyer presque exclusivement sur les données disponibles. Le résultat a été que ces approches tendent à réifier la pratique courante au lieu de définir la meilleure *pratique*. Dans les années 90, de nouveaux défis renouvellent ces tentatives d'évaluation des besoins des prestations destinées aux toxicomanes. Dans ces dix dernières années, l'accent mis sur la limitation des coûts a engendré de nouveaux concepts qui s'opposent aux vues traditionnelles d'évaluation des besoins. Cet article est consacré à ces nouveaux concepts et à leur répercussion sur l'effort d'évaluation des besoins, en particulier, l'impact du concept de la nécessité médicale.

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Comments on "Perspective on the Integration of Substance User Needs Assessment and Treatment Planning," by William E. Ford

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We are at a critical juncture in the substance use(r) intervention field. The past two decades have seen the emergence of "substance abuse" as one of the leading public health problems in the United States. Where drug addiction is concerned, there is also a serious public safety issue (i.e., crime) intertwined with the public health issue—this is a unique phenomenon in public health, and has been an issue of public policy concern. The 1970s witnessed rapid growth of a publicly funded treatment infrastructure, with some erosion in the 1980s, followed by infusion of additional funds in the late 1980s. A new set of concerns emerged in the 1990s, with a declining willingness of payers to underwrite large health care costs. Dr. Ford's article calls for reexamining approaches to evaluating the need for treatment, and how this assessment is integrated into planning for provision of care for "substance abuse" disorders. I will attempt to respond to this from the perspective of one who is responsible for developing the scientific basis for decisions about drug user treatment planning, the gains that can be achieved through treatment, and the risks to public health associated with curtailing that treatment.

Dr. Ford has highlighted some of the major dilemmas facing the "substance abuse" field in the new managed care environment. He has suggested that we now need to examine approaches to conceptualizing treatment needs assessment, and how to apply this to predicting the need for treatment services.

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He suggests that one criterion be derived from the notion of "medical necessity" or "clinical necessity," based on the likelihood of positive outcomes with consideration given to obtaining these results at the least cost. With regard to one subset of substance user patients, these desired positive outcomes are stated as "improved patient functioning, particularly on the job." I would add to this improvement of functioning the improvement of health, since psychiatric and physical comorbidity is now such a common feature of patients (or clients) presenting for treatment. For example, in a sample of patients from 22 programs, McLellan et al. (1994) reported that 31% had chronic medical problems, 30% had previous psychiatric treatment, 61% reported depression during their lifetime, 13% had attempted suicide, and 30% had problems controlling their own violence.

Several unresolved issues are highlighted by Dr. Ford. These include the overall issue of matching patients to services based on needs, distinguishing between merely desirable and actually necessary services, considering ethical issues in evaluating needs, and continuing reassessment of the role of public funding in support of substance user treatment.

There are a number of distinctions to be made in responding to these issues. Substance user treatment has evolved to serve somewhat diverse populations, with differing access to resources. The most obvious distinction is with regard to drug vs alcohol "abusers," though the overlap between these populations is widely recognized. The addiction treatment system that expanded rapidly in the 1960s and 1970s with large infusions of public funds forms the public tier of the "2-tier" system, while the private tier grew from the short-term inpatient/residential sector primarily serving alcoholic and nonnarcotic drug using patients, whose treatment is paid for by private funds and reimbursements (Gerstein and Harwood, 1990). The public tier tends to serve a population that is much more at risk for infectious diseases such as HIV/AIDS, is less likely to be employed, and has less access to private insurance. In the public tier, recent data from NIDA's Drug Abuse Treatment Outcome Study (DATOS) show that private insurance coverage for patients has declined (i.e., fewer patients have private insurance, perhaps due to increasing percentages either not employed or working without health insurance coverage) significantly over the past decade. Another distinction has to do with greater criminal involvement among public tier program patients, an issue which has occasioned some ambivalence over public support of addiction treatment.

As both tiers come increasingly under managed care, it is important that we stay focused on why we are treating addiction and the importance of treating it adequately. There is a very real hazard that failure to do this will lead to disastrous consequences for the individuals being treated and for society. Research over the past two decades has provided knowledge regarding the

effectiveness of treatment, the need for a minimum level of treatment in order to produce effectiveness, and the importance of viewing addiction from the perspective of a chronic disease model. As to the why, not only are we dealing with a disease with enormous cost if left untreated, but one that has far-reaching public health consequences. Addiction has emerged as a major factor in the transmission of HIV infection. Approximately one-third of AIDS cases are associated with injecting drug use (Centers for Disease Control and Prevention, 1994). Another major avenue of spread is through sexual activity involving infected drug users, including prostitution or the exchange of sex for drugs. Thus, infected drug users constitute a major avenue for spread of HIV/AIDS into the heterosexual population. Effectively responding to HIV on a societal basis requires that we effectively treat the condition that fosters its transmission.

The research evidence for the effectiveness of treatment, at least in public sector programs, is impressive. Studies conducted over the past 25 years not only make a convincing case for the effectiveness of treatment (for a chronic, relapsing disease) but also enhance our understanding of addiction careers and the role of treatment in those careers. For example, a study by Hubbard et al. (1989) found a reduction of 70% in the prevalence of regular heroin use among methadone maintenance patients and a 50% or greater reduction in predatory crime among addicts enrolled in treatment 90 days or more. In addition to this, there is a growing body of evidence suggesting that treatment of addiction is effective in preventing HIV transmission by reducing risk behaviors. For example, Ball et al. (1988) found that some 71% of methadone patients in his study had ceased intravenous drug use. Metzger et al. (1993) compared opiate addicts in methadone maintenance treatment with a sample of continuously out-of-treatment addicts, and found that, over an 18-month period, there was a sixfold difference (3.5 vs 22%) in HIV seroconversion. Thus, treatment for addiction appears to have a major benefit in preventing transmission of this devastating and very costly infection.

A landmark study by Simpson (1979), which has been corroborated by other studies, established duration of treatment as an important predictor of outcome. While population differences and self-selection may partially explain this, it does point up the risk of premature truncation of treatment episodes. A major problem with arbitrarily shortening treatment is that it is likely to interfere with recovery; it is necessary to recognize that many drug users enter treatment under duress (Leukefeld and Tims, 1990; Sells and Simpson, 1982), and many leave treatment prematurely. A major need in addiction treatment would seem to be a better understanding of how much and what kind of treatment is needed for specific patient subgroups. Examples of the kinds of research NIDA is currently supporting include studies of service levels for

patients with different need profiles at admission, treatment outcomes for dually diagnosed patients, service models for homeless, mentally impaired drug user patients, assessment of motivation and readiness for treatment, and matching patients to treatment.

In his exploration of the concept of "medical necessity" (or, as alternatively defined, "clinical necessity"), which he identifies as a cornerstone of managed care, Dr. Ford sets out the goal as "to provide *only* that service which has been shown to be effective for the injury or sickness being treated." It is now clear how services would be classified as necessary under such a criterion. For example, vocational services are widely viewed as important in the treatment of addiction, but the evidence for their "effectiveness" in reducing addiction is limited (Platt, 1995). Moreover, the emergence of HIV/AIDS in drug using populations has widened, not narrowed, the range of services I would argue are necessary rather than merely desirable. In addition to specific services, McLellan et al. (1993) strongly argued that service *levels* must be sufficient to achieve positive treatment outcomes. In a study reported in that article, a comparison of outcomes was made between methadone patients randomly assigned to minimum (methadone but no other services), standard (methadone plus counseling), and enhanced (methadone plus counseling plus medical/psychiatric, vocational, and family therapy) service levels. Patients who had medical/psychiatric emergencies or unremitting opiate or cocaine use (69% of the minimum services group) were "protectively transferred" from the trial for ethical reasons. Over time, 22% of the minimum services group achieved 12 consecutive weeks of opiate-free urines, and none achieved 16 consecutive weeks. For the standard services group, the corresponding percentages were 59 and 34, while the enhance services group achieved 74 and 55%, respectively. These differences were statistically significant, and argue for the value of enhanced treatment. This becomes a matter of some controversy because while we have indications that outcomes improve with service levels, we do not have precise knowledge of the levels that produce best outcomes.

Expanding from the "medical necessity" perspective, an inference is drawn that if only "medically necessary" (as opposed to merely "desired") services are allowed by managed care, then health costs can be moderated or contained. This inference is formally stated as follows: "Clearly then, in planning substance user treatment, only the least expensive treatment which will optimize treatment results should be given." Given the complexity of cases presented for treatment, there will be a need for effective communication with managed care gatekeepers, and advocacy on behalf of patients, in order to assure that appropriate services are not denied.

The challenge to "optimize treatment results" stated above brings us to the issue of matching patients to treatment. As Dr. Ford points out, we may not

now have enough information about the costs and effectiveness of different modalities and intensities of treatment to permit us to match patients to treatment programs in a way that can assure control of both costs and outcomes. I am in agreement that research must continue to seek to establish reasonable relationships between patient signs, symptoms, and characteristics and treatment approaches. A number of sets of patient placement criteria exist, but empirical validation is lacking. Progress is being made in this area, and criteria developed by the American Society of Addiction Medicine (ASAM) are currently being validated under a NIDA research grant. However, it is clear that the managed care movement will not wait for scientific evidence. This places a special obligation on the scientific community to move with deliberate speed to develop the knowledge required.

As we develop more knowledge about who is most likely to benefit from available treatments, and about effectiveness of available treatments, ethical issues will inevitably be raised in regard to access to care. Managed care and capitation approaches will ration access to treatment, and some types of treatment may be less available. There is a very real risk that we may encounter serious public health problems when we limit access in a way that results in either not treating or undertreating addiction. For example, the previously cited study of HIV seroconversion among addicts in treatment and out of treatment suggests that small economies achieved by limiting treatment may in fact result in far greater health care costs. Much of the cost offset in treating drug users is acknowledged to be in the area of reduced criminality and incarceration (Gerstein and Harwood, 1990; Gerstein et al., 1994), but public support for the funding of drug user treatment is far lower than public support for the funding of jails and prisons. Yet the cost of treatment is far less than the cost of incarceration, or for that matter the cost of not treating addiction. Cost–benefit ratios consistently favor substance user treatment, with ratios cited by Gerstein et al. (1994) at 7 to 1 for the CALDATA study (ranging from 4 to 1 for inpatient care to 10 to 1 for outpatient).

Dr. Ford raised the question of continually reassessing the role of public funding in support of the substance user treatment system. Such a reassessment has clearly taken place over time, with the shift from direct funding to block grants, rapid expansion of those grants, support of substance user treatment under Medicaid and other public insurance programs, and state decisions to move substance use clients into managed care and capitation regimens. The role of health services research in this continuing reassessment is to study these new developments in funding, organization, and management of care. The health care reform movement has moved to the state level, and the need to further rationalize financing and service delivery has led to rapid developments in this regard. The efforts to understand the implications of these rapid changes for

public support of treatment must include research focused on the costs, cost-effectiveness, cost–benefits, access and utilization, management of care, and quality of care for substance abuse patients. It is essential that state agencies be actively involved in such research.

The consideration of continued public funding of treatment for substance users must also recognize that value-laden issues complicate needs assessment and may well interfere with allocation of resources truly in the public interest. The conflict between ideology and science with regard to addiction treatment is a persistent problem. The urgent need in public policy is to develop the scientific basis for intelligent decisions about provision of treatment, and for scientific agencies to effectively communicate the findings which can be useful in public policy and in practice. We are entering a period of change for the provision of substance user treatment as we know it. The change is driven by economics, and we face major dilemmas.

We have a substance user treatment system that has evolved and is now facing major resource constraints. Science has documented the effectiveness of much of the treatment provided by this system, and has pointed up ways in which it can be improved. The need to treat addiction and its concomitant health problems adequately and effectively requires a commitment on society's part and a willingness to view costs and benefits in a broader context than short-term considerations would suggest. Managed care is a reality, and our task at this point is to provide the scientific basis on which to make informed decisions about the care that is, ultimately, in all our interests.

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Comments on "Perspective on the Integration of Substance User Needs Assessment and Treatment Planning," by William E. Ford

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I found Dr. Ford's ideas generally balanced and fair. I believe that, while the emphasis on treatment intensity and setting is appropriate granted immediate and sometimes large differences in costs, other factors relate to the long-term benefit–cost ratio of alcoholism treatment. Perhaps these too should have been mentioned.

Most importantly, research on treatment efficacy suggests that alternative modalities differ greatly in long-term outcome (e.g., Hester and Miller, 1995). So too, factors such as type of counselor as well as social and work setting support for abstinence appear to influence prospects for successful treatment outcome. Unfortunately, the gap between well-controlled research on treatment efficacy and actual clinical practice is particularly wide in the field of substance abuse treatment. In the past, research findings have had minimal influence on utilization review and cost-containment strategies of third party payers. The paper would be further strengthened were these problems addressed.

While I agree that outpatient treatment may be about as effective as more intense interventions for alcoholics in general, several studies do suggest that more intensive treatment is more appropriate for particular types of alcoholics (e.g., those suffering greater collateral psychopathology, those manifesting higher levels of dependence, and those with living environments not supportive of abstinence or moderated consumption). A related important topic deals

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with temporal spacing of clinical contacts. Would patients do better if they were seen less frequently but over a longer period of time than is current practice?

While I found Dr. Ford's synopsis helpful and thought-provoking, I believe that several additional important issues bear attention.

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Social Pharmacology

The Rules of Drug Taking: Wine and Poppy Derivatives in the Ancient World. III. Wine as an Instrument of Aggressive Behavior and of Ritual Madness

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ABSTRACT

Wine-induced facilitation of aggressive behavior was well known by the Ancients but, being considered a sign of cowardice, its exploitation on the battlefield was attributed to barbarians only. Aspects of drinking behavior considered particularly negative, such as drinking undiluted wine or getting drunk, were also attributed to barbarians. Drunkenness was, however, condoned during Dionysian feasts, when wine became, along with dance, the instrument of enthusiasm, the possession by the god. Similarities between Dionysian feasts and Sciamanic rites are discussed.

WINE AND AGGRESSIVENESS

The Ancients knew very well that drinking wine increases aggressivity up to the point of activating violent behaviors. Therefore, it is not infrequent to find myths in which drunkenness was associated with murders. This association is typically expressed in a version of the myth of Orpheus. The women

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of Thrace, exasperated by the uncompromising misogyny of the legendary musician, found in wine the courage to attack him and tear him limb from limb. Reporting the story, Pausanias concluded: "and hereafter, the custom of their men has been to march to battle drunk" (Pausanias, 1955). There is no doubt that here Pausanias reported a racial cliché that wanted Thracians to be particularly aggressive under the effect of wine. In his *Carmina*, Horace had already said: "To fight with goblets meant for pleasure's service is fit for none but Thracians. Banish such barbarous ways! Protect from bloody brawls our Bacchus, who loves what's seemly" (Horace, 1952).

The use of wine during war is not surprising at all, not least because we still have memories of what happened on the battlefields of World War I. "One soldier remembers what the air smelled like during a British attack: 'Pervading the air was the smell of rum and blood'" (Fussel, 1975). In 1922 a British medical officer expressed with brutal candour the reason for this deliberate encouragement of drunkenness: "Had it not been the rum ration, I do not think we should have won the war" (Fussel, 1975). And on the Italian front, Lussu said: "In this war, alcohol is the combatant's soul; alcohol is our fuel. That is why soldiers, in their infinite wisdom, call it gasoline" (Lussu, 1970). And one of Nuto Revelli's "losers" testifies: "During an attack, we're half drunk; drink gives courage to the mind. We can have as much as we want, as long as we advance" (Revelli, 1977).

This use has a strong psychopharmacological rationale: it is very likely that, in the peculiar context of battle, the capability of alcohol to release aggressivity and to inhibit self-defensive behavior (i.e., escape behavior) (Gustafson and Källmén, 1989; Gustafson, 1991; Murdoch et al., 1990) would heighten the conditioned aggressiveness inculcated by military training. From this perspective it seems strange that Greeks originate from an infamous act the habit to go drunk into battle and to locate it in a barbaric environment. More appropriately, this habit could appear as a pragmatic exploitation of psychopharmacological properties of alcohol. The point is that, although Athenaeus stated that "many other persons contended in battle more gloriously when in a state of inebriety" (1969a), the Greek rule was to go into battle sober, and few exceptions can be quoted. The most conspicuous is that of Philip, Alexander's father. According to Theopompus "Philip was a madcap and inclined to rush headlong into danger, partly by nature and partly because of drink; for he was a deep drinker and was often drunk when he sallied into battle" (Athenaeus, 1969b). Whatever the reason was, Greeks and Romans considered the act to go drunk into battle strange—more: dishonorable and cowardly: "[Wine] Thrusts the coward into the field" (Horace, 1995a). It never happens, for instance, to Homeric heroes. At the most, their strength and

courage sprang from a magical relationship with nature (Snell, 1963, p. 283). Being dishonorable and cowardly, this habit could not be efficient: "Byzantians are besotted with wine and live in the wine-shops; they let out their own marriage-chambers, along with their wives, to strangers, and cannot bear to hear the sound of a war-trumpet even in dreams" (Athenaeus, 1969c), and "Argive[s] from Tiryns . . . are always drunk when they fight their battles. . . . So that is why they always run away!" (Athenaeus, 1969d).

Thus, the habit of fighting under the effect of wine had to be relegated out of the borders of civilization, and Tracians were indeed far away from any form of civilization—"the impious breasts of Thracians" wrote Horace (1995b).

BLAMED AND CONDONED DRUNKENNESS

It is possible to understand some aspects of the Greeks' rules of drinking by looking at the way they consider drinking habits of their neighbors—the Barbarians. Speaking of Thracians, their immoderate drinking was considered proverbial: "She drank to the tune of the flute as a Thracian or Phrygian drinks his ale" said Archilocus (1979). According to the Greek mentality, a clear-cut label of this intemperance consisted in the barbaric habit of drinking pure wine: ". . . the Scythians and Thracians, both men and women, take their wine neat and let it pour down over their clothes, and regard this practice of theirs as a noble and splendid practice; and the Persians indulge greatly in these and other luxurious habits. . ." (Plato, 1952). Herodotus reported that the already quoted Spartan king Cleomenes became a drinker of strong wine "by consorting with Scythians" (Herodotus, 1950) and in the above-mentioned episode of the Centaur Eurytus, Ovid called *merum* (pure) the wine that made crazy the wild creature (see Part II). Finally, in Sparta, once a year it was used to parade Helots, the bottom-most class, dead drunk through the town to show the young that indecent, drunken behavior was fit only for slaves (Lissarague, 1987). All the above-reported mythological and anecdotal literature sends the unequivocal message that the consumption of wine in excess, beside being dangerous, is a habit proper of uncivilized people.

Nonetheless, wine was a symbol of civilization, and Greeks considered it "not unlike bread, as a remedy against a coarse, savage and feral nature." As Tiresias tells us in the Euripides' Bacchanals (1950a): "Two chiefest powers, prince among men, there are: divine Demeter—Earth is she, name her by which name thou wilt—she upon dry food nurtureth mortal men: Then followeth Semele's son [Dionysus]; to match her gift the cluster's flowing draught he found, and gave to mortals, which gives rest from grief to men woe-worn, soon as the vine's stream filleth them. And sleep, the oblivion of

our daily ills, he gives. There is none other balm for toils. He is the god's libation, though a god, so that through him do men obtain good things." Dionysus is the god who perfected Zeus' creative work by giving man the gift of wine (Proclus, 1906) and, under his protection, the savage violence released by drunkenness became licit, acquiring a ritual meaning. It was the case of the maenads, the women being prey of the ritualized enthusiasm, the possession by Dionysus.

Probably the ritual madness of enthusiasm is nothing but the Greek equivalent of the archaic and universal custom of inducing a trance with psychotropic substances. The Asiatic shamanists used hashish and the mushroom *Amanita muscaria* (Eliade, 1964, pp. 400–401; La Barre, 1972; Harner, 1973): the Greeks used wine. This generalization is probably incorrect if we consider the different meanings of Sciamanic trance and Dionysian enthusiasm. Thus, Eliade contends that "Bacchic enthusiasm does not resemble shamanic ecstasy" (*Cit.* p. 388) and Dodds (1986, p. 89) outlines that during a trance the spirit *leaves* a shaman's body whereas, by definition, enthusiasm consisted in the *entering* of the god into a believer's body. Nevertheless, psychotropic drugs were taken in both cases to induce an altered state of consciousness before performing a rite.

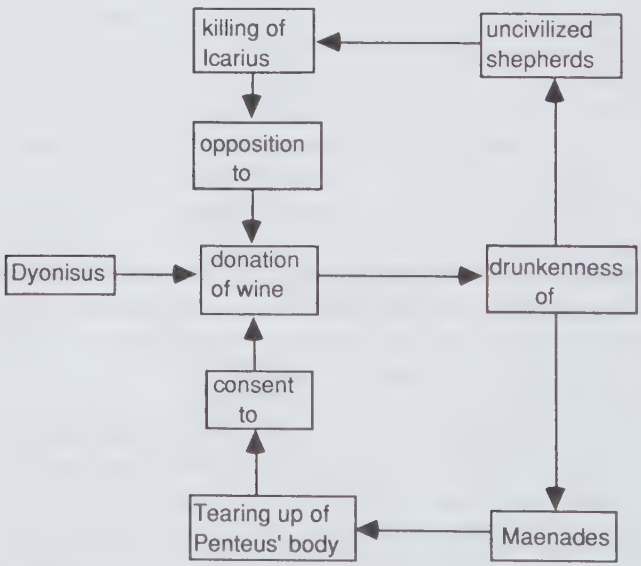

Fig. 1. The graph summarizes myths associated with the struggle for the introduction of wine.

It has been suggested that Dionysian rites had the function to give a socially controlled outlet to irrational collective behaviors (Dodds, 1986, p. 101). However, the mythological background of these rites preserved intact the destructive potentialities of drunkenness. Maenads were the women who, possessed by Dionysus, hunted and tore to pieces Penteus because he appeared to them as a hare (Euripides, 1950b). Penteus, "the man of the suffering," is both an enemy and a victim of the god, and the story of his punishment is closely similar to that of the murder by Thracian women of Orpheus, another apparent enemy of Dionysus (Kerényi, 1992, p. 301). Thus, according to an *ante litteram* Dantesque retaliation, the opponents to the introduction of wine were killed by drunk aggressors. It is surely not a chance event that these episodes stand in bloody symmetry with that of Icarius, the apostle of wine among the Greeks, killed by drunk shepherds. On both sides the struggle for the introduction of wine is fought by socially inferior creatures—wild shepherds and women possessed by the god. And on both sides intoxication is associated with blood and sufferance. However, the result of the struggle is the triumph of Dionysus, and then of civilization (Fig. 1). Is there any better way to represent the ambiguity of wine?

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RESUMEN

Los antiguos sabían muy bien que el vino favorecía el desencadenamiento de la agresividad. Sin embargo, la eplotación de estos efectos en el campo de batalla era juzgada como un signo de cobardía, perteneciente al mundo barbárico. Asimismo, se atribuía a las costrumbes barbáricas culquier búsqueda de la ebriedad alcohólica, echo que subraya una vez más su significado negativo en el mundo grecorromano. Sin embargo, le ebriedad alcohólica se toleraba en las fiestas dionisíacas; en estas ocasiones el vino, junto a la danza, era el instrumento del entusiasmo, la posesión por parte de el dios. Finalmente, se analizan las analogías entre fiestas dionisíacas y ritos mágicos.

RÉSUMÉ

Les anciens étaient parfaitement conscients du fait que le vin facilite les comportements agressifs. Profiter de cet effet sur le champ de bataille était cependant consideré comme un signe de lâcheté relégué au monde barbare. Dans tous les cas la recherche de l'ivresse était attribuée aux barbares et cela souligne ultérieurement la perception négative qu l'ivresse avait dans le mond gréco-romain. Toutefois, elle était acceptée pendant les fêtes dionysiaques, où le vin, avec la dance, devenait l'instrument de l'enthousiasme, de la possession de la part du dieu. L'analogie entre les dionysiaques et les rites chamaniques est discutée.

RIASSUNTO

Gli Antichi erano ben consapevoli della facilitazione del comportamento aggressivo ad opera del vino. Lo sfruttamento di tale effetto sul campo di battaglia era tuttavia considerato segno di codardia e relegato nel mondo barbarico. In ogni caso la ricerca dello stato di ubriachezza era attribuita ai barbari e ciò sottolinea ulteriormente il significato negativo che l'ebrezza alcolica aveva nel mondo greco-romano. L'ubriachezza veniva tuttavia condonata durante le feste dionisiache, dove il vino, assieme alla danza, diveniva lo strumento dell'entusiamso, la possessione da parte del dio. La somiglianza tra feste dionisiache e riti sciamanici è discussa.

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Research Note

Smokeless Tobacco Use among Big Ten Wrestlers and Selected Associated Factors*

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ABSTRACT

The use of smokeless tobacco (ST) by 234 Big Ten intercollegiate wrestlers was surveyed, with a special interest in determining their beliefs about ST health consequences and discriminators of ST use. Self-reported ST use was validated by sputum analysis of a selected team. Twenty-eight percent of the wrestlers were current, regular ST users. This is well above the national norm. Over 42% of the wrestlers had used some form of ST in the past year. Evidence indicates that three variables (prior cigarette smoking, receiving a free ST sample, and alcohol consumption) were strong discriminators of ST use.

Key words. Smokeless tobacco; Chewing tobacco; Oral tobacco; Snuff; Athlete's use

*Research completed within the Department of Applied Health Science, Indiana University.

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INTRODUCTION

The question of whether the prevalence of smokeless tobacco (ST) use is significantly greater in collegiate wrestlers than in the rates determined for nonathletic college males, as well as selected behavioral and attitudinal factors associated with ST usage, prompted this investigation. Wrestlers may be at high risk for ST use because of the need to make weight classifications (Steen and Brownell, 1990). The nicotine in ST is a stimulant, suppressing appetite (US Department of Health and Human Services, 1992). Further, it increases salivation and fluid loss through expectorating. An overabundance of expectorating could be perceived by users as a way to rid the body of fluid and therefore reduce body weight.

METHODOLOGY

Subjects selected were 234 Big Ten Athletic Conference wrestlers. Data were collected at Big Ten universities during the regular wrestling season. The instrument was a questionnaire developed by Dr. Albert Glover (1984), modified by the investigator, sent to a jury of experts, and pilot studied with a non-Big Ten Division I wrestling team.

RESULTS

Selected Wrestler Background Characteristics

Thirty-seven percent of *all* wrestlers responded affirmatively when asked if any of their coaches use ST. Of the ST users, 32.8% indicated that their coaches used ST. When asked if their university had a ST policy, 31.6% of the wrestlers said "no," 19.9% said "yes," and 48.1% did not know. Eight percent indicated that their university had no drug education program for athletes, 57% indicated there was a drug education program, and 34.8% did not know if such a program existed. Fifty-four percent indicated that their university had never presented a program on ST, while 19.7% indicated that such a program had been presented. Less than 14% had received an oral examination as part of their preseason physical examination. Of the ST users, 54 wrestlers (85.7%) had never received an oral exam as part of their preseason physical examination.

An analysis of 15 variables was performed to determine variables that discriminate ST users and nonusers. The direct method was used (all variables were entered simultaneously, providing they passed the tolerance criteria) for entering the data. The only structure coefficient loadings considered effective

in discriminating ST users and nonusers were those above .30 (Tabachnick and Fidell, 1989).

Variables meeting this criteria were: having smoked cigarettes (.59), receiving a free ST sample (.49), and alcohol consumption (.37). A second cluster of variables had moderate loadings: father approves of ST use (.28), best friends use ST (.23), and belief that ST assists with weight reduction (.22). ST users and nonusers could be correctly classified 27.5% above chance using the 15 selected variables.

Selected ST User Behavior Characteristics

Sixty-five (27.8%) of the wrestlers were current ST users. Of this group, 64 were snuff users and one was a ST chewer. The average age of initiation of wrestler ST use was 13.6 (range: 6 to 20 years old). The one ST chewer began ST use at age 17.

Over half of the wrestlers (52.9%) used the same amount of ST during in-season and off-season. The number of cans of snuff used per week by the 64 snuff ST users ranged from 30.8% using less than one can to 10.8% using more than five cans during the in-season. Off-season rates ranged from 33.3% using less than one can to 12.1% using more than five cans per week. The one ST chewer used less than one pouch per week in-season, and one pouch per week off-season. Nineteen percent of the wrestlers held the ST in their mouths for over 30 minutes per dip. The brand of snuff used most by the wrestlers was Kodiak (40%), followed by Skoal long cut and wintergreen (36.9%), and Copenhagen (20.0%). The one ST chewer preferred Redman.

Fifty-three percent of the ST users had attempted to quit at least once in the past year. Nearly 43% (42.9%) indicated that they intend to try to quit, while 34.9% did not intend to try to quit during the next year. The percent of ST users who had smoked cigarettes was 56.2% compared to 26.9% of nonusers. None currently smoked cigarettes.

Health beliefs of ST users were significantly different from nonusers. There was also a significant difference in their belief that ST assists with weight reduction ($P = .04$).

A total of 13.8% of the users reported experiencing white wrinkled patches in their mouths where they hold the tobacco. Nearly 19% reported having sore and irritated gums. No significant relationships between self-reported incidence of oral lesions and accessibility to preseason oral exams was found.

The study sought to determine the correlation between exposure to ST advertising and wrestlers' use of ST. Only one variable, receiving a free smokeless tobacco sample, was statistically significant. Sputum samples analyzed by chromatography gave the nanograms of cotinine per milliliters of

saliva for each wrestlers completing the questionnaire at a selected university. There was a perfect correlation between self-reported ST use and results of the sputum analysis.

DISCUSSION AND IMPLICATIONS

The data collection revealed that 42.3% of the wrestlers have used some form of ST in the past year, well above the percentage of use reported for the general public in this age group (US Department of Health and Human Services, 1991, 1994). Nearly 28% of the wrestlers were current regular users of ST, also well above the percentage of usage reported for college students (Cinelli et al., 1990; Glover et al., 1986; McDermott and Marty, 1986; US Department of Health and Human Services, 1994).

Of the Big Ten Athletic Conference wrestlers, 27.8% ($n = 65$) were current users of ST. Snuff users represented 98% while 1.5% were users of chewing tobacco. This is consistent with ST sales statistics (Department of the Treasury, 1992). The American Cancer Society (1990) states that of greatest concern is the resurgence of ST, specifically the increased use of snuff.

Descriptive statistics from the study indicated that the brand preference for snuff users were 40.0% Kodiak (straight and wintergreen), 33.8% Skoal (long cut), and 20.0% Copenhagen. This is of concern because while Kodiak has one of the lower nitrosamine contents of all snuff brands (8.3 parts per million), Skoal and Copenhagen have two of the three highest levels (22.3 and 20.6 parts per million, respectively) (Brunnemann and Hoffman, 1991). The FDA and the USDA recommended no more than 5 to 10 parts per billion of nitrosamines in preservatives (Glover et al., 1990). The levels of nitrosamines in the snuff brands primarily used by the Big Ten wrestlers are over 100 times the level allowed by the FDA and USDA.

While the National Cancer Institute/National Institute of Dental Research Workshop on ST (1991) recommended that age of initiation be considered, many studies have not done so. Notably, mean age of initiation of ST use among the wrestlers was 13.6 years, while Wisniewski et al. (1990) found that 75% of minor league baseball players had initiated ST after age 17. This is slightly above the 10-year initiation age reported by the US Department of Health and Human Services (1994).

Fifteen variables were analyzed which correctly classified users and nonusers 77% of the time. Three variables (prior cigarette smoking, receiving a free ST sample, and alcohol consumption) were strong discriminators of ST use. Similar to prior ST studies, ST use by peers was a moderately good indicator of ST use. Alcohol use responses may have been low as nine of the teams were in their regular competitive season when the questionnaire was

administered. Team rules coupled with self-discipline may have reduced reported alcohol use due to the preoccupation of maintaining body weight.

Although none of the 234 wrestlers indicated that they currently smoked cigarettes, prior smoking was a strong discriminator of ST use. This is consistent with the findings from many other studies.

The necessity of finding predictors of ST use is critical if effective ST prevention programs are to be designed. The National Cancer Institute/National Institute of Dental Research Workshop (1991) cited identifying predictors of ST use as one of their priorities.

Of the studies that have been done with athletes, few have included comparing health beliefs of users and nonusers. Users and nonusers had significantly different opinions of the health consequences of using ST. One finding was that ST users have a significantly greater belief than nonusers that ST assists with weight reduction. No studies have addressed this issue, which may be unique to wrestlers due to the necessity of their making weight classifications.

The findings indicated that there was no correlation between self-reported incidence of oral lesions and access to oral exams during medical screenings. The study did indicate that 86.5% of the 234 wrestlers had never been given an oral examination as part of their preseason screening. ST advertisement done by giving away free ST samples did significantly relate to whether a wrestler was a user or nonuser. This is consistent with Ernster's (1989) contention that United States tobacco companies target and market to youth by giving free samples through the mail and at sporting events.

Although the study found no relationship between lack of receiving ST education and ST use, it should be pointed out that over 17% of the subjects had never received any type of ST education. Of those who had, most of that education had occurred at their high schools versus universities. Glover, at the First International Conference on Smokeless Tobacco (Columbus, Ohio, April 1991), stated that there will be an oral cancer epidemic by the year 2010 if we don't take steps now to intervene with prevention programs.

These findings suggest that athletic directors, coaches, and athletic trainers in the Big Ten Athletic Conference should integrate ST education into the university athletic department drug education programs. The findings also suggest that team physicians in the Big Ten should include oral examinations with their preseason screenings.

The findings have implications for all health educators. Wrestlers had not been studied before, and the finding that they believe that ST assists with weight reduction had never before been reported in the literature. This should remind health educators that a single prevention program cannot be used for all groups. It appears that programming for the Big Ten wrestlers should in-

clude education addressing their weight loss beliefs and practices. Health educators must determine the rate of use among all groups and the factors that are associated with their ST use if prevention programs are to be effective.

Limitations

The results of this research can only be applied to the Big Ten wrestlers studied, not to all university wrestlers. While efforts were made to validate self-reports with sputum analysis, this was only done with one university.

Needed Research

Based on the results of this research, it would appear that wrestlers may be at risk for initiating ST use. Wrestlers at all levels should be studied to affirm or refute these results. In addition, prevention programs should be looked at to determine if they meet the unique needs of different groups.

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RESUMEN

Hemos estudiado el uso de tabaco de masticar y rapé (TMR) en 234 competidores de la lucha libre universitarios de la Big Ten (asociación de diez grandes universidades norteamericanas), intentando determinar sus creencias respecto a las consecuencias del uso del TMR en la salud y los indicadores del uso del TMR. El uso declarado del TMR por los luchadores ha sido verificado en el analisis del esputo de los integrantes de un equipo que se había escogido. Veinte y ocho por ciento de los luchadores usaban regularmente TMR en el momento del estudio, lo cual supera considerablemente la norma nacional. Más de 42% de los luchadores han utilizado tabaco de masticar o rapé el año pasado. Es evidente en este estudio que tres variables (uso anterior de cigarillos, recibo de una muestra gratuita de TMR, y consumo de alcohol) son fuertes indicadores del uso de TMR.

RÉSUMÉ

Nous avons étudié l'emploi du tabac à chiquer et du tabac à priser (TCPC) par 234 lutteurs universaires de la Big Ten (une association de dix grandes universités américaines) en visant particulièrement leurs opinions par rapport aux conséquences de l'emploi du TCPC sur la santé et aux indicateurs de l'emploi du TCPC. Les admissions d'emploi du TCPC faites par les lutteurs eux-mêmes ont été verifiées par l'analyse des crachats d'une équipe choisie. Vingt-huit pourcent des lutteurs utilisaient regulièrement le TCPC et l'utilisaient au moment de l'étude. Cela se situe bien au dessus de la norme nationale. Plus de 42% des lutteurs aviaent utilisé le tabac à chiquer ou le tabac à priser pendant l'année précédente. Cette étude suggère que trois variables (consommation préalable des cigarettes; réception d'un échantillon du TCPC) sont des forts indicateurs de l'emploi du TCPC.

THE AUTHOR

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